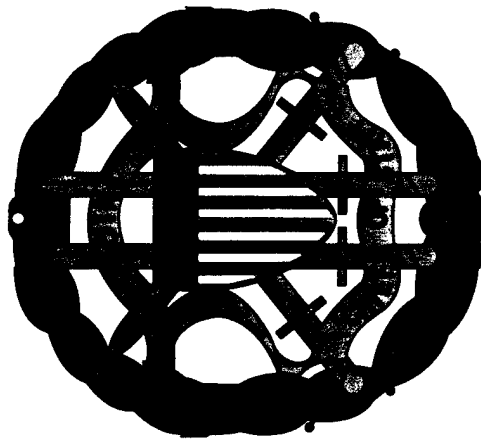
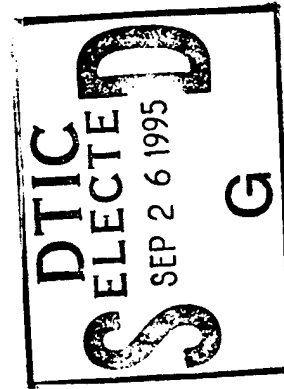


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**JOINT  
COMMAND, CONTROL, COMMUNICATIONS, AND  
COMPUTERS SYSTEMS DESCRIPTIONS**



**Volume II  
1995**



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REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188 Exp. Date: Jun 30, 1986	
1a. REPORT SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY <b>N/A</b>			3. DISTRIBUTION / AVAILABILITY OF REPORT <b>Unlimited</b>		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE <b>N/A</b>					
4. PERFORMING ORGANIZATION REPORT NUMBER(S) <b>N/A</b>			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION <b>SAIC</b>		6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION <b>The Joint Staff, C4 Resources, Programming and Evaluation Division (J6E)</b>		
6c. ADDRESS (City, State, and ZIP Code) <b>SAIC - ITG 1710 Goodridge Drive McLean, VA 22102</b>			7b. ADDRESS (City, State, and ZIP Code) <b>Room 1D836 The Pentagon Washington, DC 20318-6000</b>		
8a. NAME OF FUNDING / SPONSORING ORGANIZATION <b>Joint Staff J-6</b>		8b. OFFICE SYMBOL (If applicable) <b>J-6E</b>	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER <b>MDA903-93-D-0019</b>		
8c. ADDRESS (City, State and ZIP Code) <b>Joint Staff J-6E The Pentagon Washington, DC 20318-6000</b>			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
					WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) <b>Joint Command, Control, Communications, and Computers Systems Descriptions, Volume II (U)</b>					
12. PERSONAL AUTHOR(S) <b>L. Sheehan, M. Wilson</b>					
13a. TYPE OF REPORT <b>Final</b>		13b. TIME COVERED FROM <b>Dec 93</b> TO <b>Dec 94</b>		14. DATE OF REPORT (Year, Month, Day) <b>95/04/14</b>	
				15. PAGE COUNT <b>318</b>	
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	Command, Control, Communications and Computers (C4) Systems, Global C4 Assessment (GC4A), Defense Information Infrastructure (DII), C4I for the Warrior (C4IFTW), Global Command and Control System (GCCS), Defense Information System Network (DISN), Military Satellite Communications (MILSATCOM) Systems, Joint Intelligence, Surveillance and Reconnaissance (ISR), Information Warfare (IW), Technology Insertion, Future Objective Architecture.		
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
<p>The Joint Command, Control, Communications, and Computers (C4) Systems Descriptions Document (SDD) Volume I and Volume II are companion documents to the Joint Global C4 Assessment (GC4A) published by the Joint Staff J-6.</p> <p>Volume I (classified) provides an executive-level summary of major C4 systems.</p> <p>Volume II presents an unclassified overview of major C4I systems concepts, a synopsis of the Commanders of the Unified Commands (CINC) missions as well as a short summary of most of the C4I systems referenced in individual CINC C4 Systems Master Plans (C4SMP).</p>					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT			21. ABSTRACT SECURITY CLASSIFICATION		
<input checked="" type="checkbox"/> UNCLASSIFIED / UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			<b>UNCLASSIFIED</b>		
22a. NAME OF RESPONSIBLE INDIVIDUAL <b>Mr. Thomas Thoma</b>			22b. TELEPHONE (Include Area Code) <b>(703) 614-5592</b>		22c. OFFICE SYMBOL

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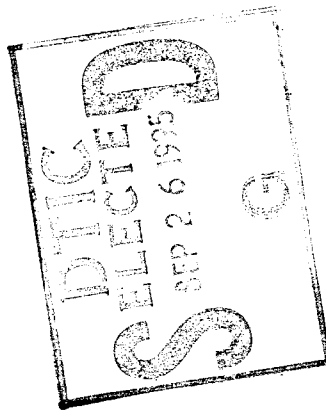
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J-6A-00422-95  
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1. This memorandum promulgates the Joint Command, Control, Communications, and Computers Systems Descriptions (C4 SDD) Volume II.
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3. Questions concerning this document should be addressed to the Joint Staff/J6E 227-8590, Commercial (703) 697-8590.



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# Introduction

## Purpose

Volume II of the Joint Systems Description document is intended to be a companion document to the Global C4 Assessment and to provide a C4I overview and a quick reference to summaries of CINC Unique, Service and Joint C4 Systems.

## Structure

This document is divided into two sections. Section I is an overview of major C4I categories and their relationships to one another. Section II is a summary of C4I systems. The material for this volume has been extracted from CINC C4SMPs and Service architectures.

For the purposes of this document the C4I Structure has been categorized into the following areas:

- Defense Information Infrastructure Concept
- C4I for the Warrior Concept
- Global Command and Control System (GCCS) Concept
- Global Grid
- Defense Information System Network (DISN)
- Military Satellite Communications (MILSATCOM) Systems
- Other Telecommunications Systems
- Joint Reconnaissance, Surveillance and Intelligence
- CINC and CJCS Unique Systems
- Unique Data, Information and Applications
- Information Warfare (IW)
- Technology Insertion
- Future Objective Architecture

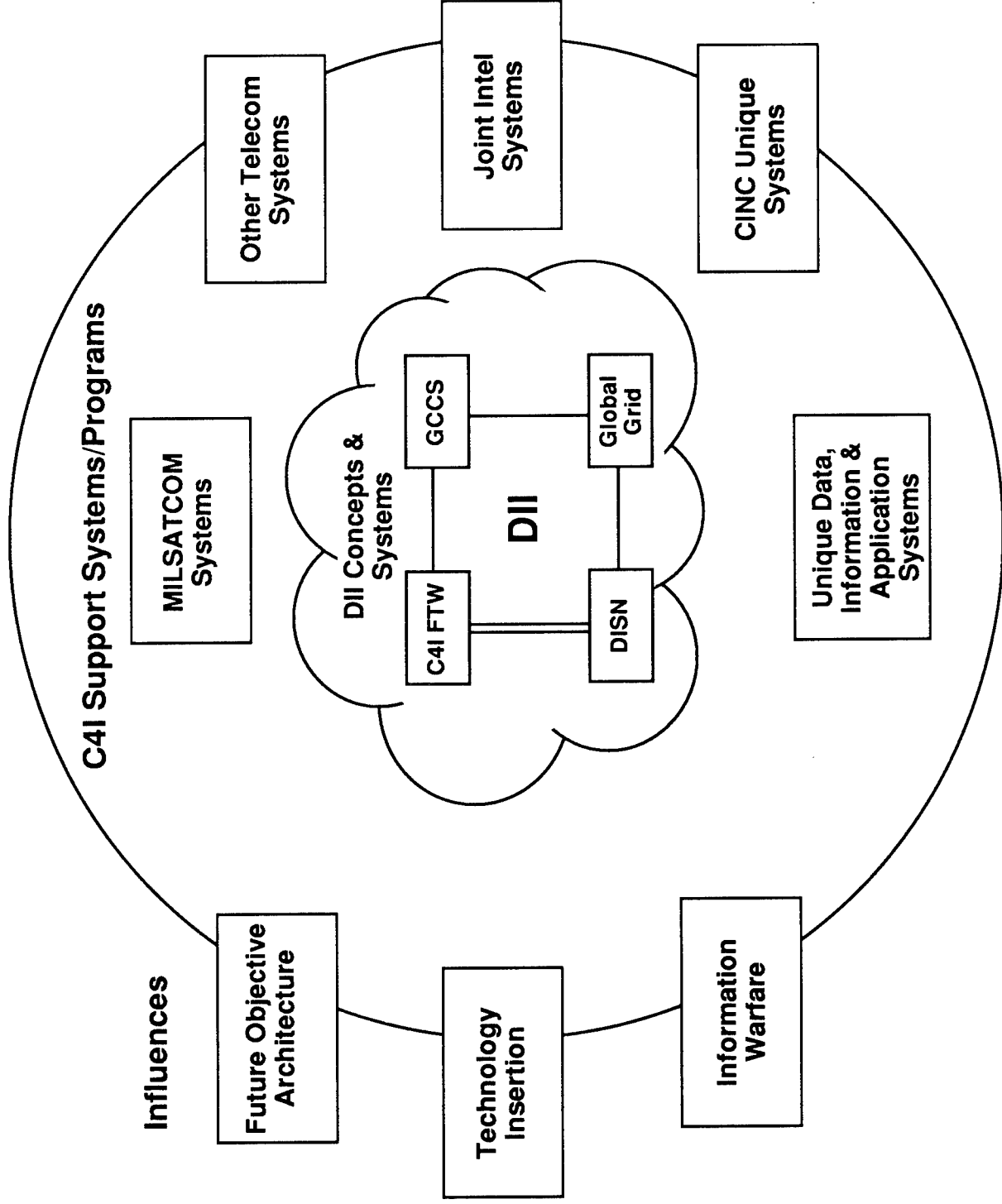
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## **Section I**

# **Overview of Military C4 Concepts and Programs**

# Military C4I Overview

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## Military C4I Overview

This section of the Joint Command, Control, Communications and Computers Systems Descriptions depicts the combinations of programs and systems of which the Military C4I program is comprised. Figure 1, Military C4I Overview, shows twelve categories into which C4I programs can be parsed. Each of these categories is discussed in greater detail in subsequent sections.

At the core of the Military C4I is the Defense Information Infrastructure (DII) which is a component of the National Information Infrastructure. The DII is composed of three major programs (or concepts); The C4I For The Warrior, Global Command and Control Systems (GCCS), and the Defense Information Systems Network (DISN). The Global Grid is an enabling program which supports the other concepts with new technology as it matures. Supporting these key operational elements of the C4I are programs which cut across each of the core elements in their support of C4I in general.

At the center of the military C4I is the DII which seeks to integrate information transfer and maximize interoperability. "The DII encompasses information transfer and processing resources, including information and data storage, manipulation, retrieval, and display. Specifically, the DII is the shared or interconnected system of computers, communications, data, applications, security, people, training and other support structure, serving the DOD's local and worldwide information needs. The DII (1) connects DOD mission support, command and control, and intelligence computer and users through voice, data, imagery, video, and multimedia services; and (2) provides information processing and value-added services to subscribers over the DISN. "Unique user data, information, and user applications software are not considered part of the DII." ASD(C3I) memorandum, Information Management Definitions, 25 Feb. 94.

# Notional View of C4I

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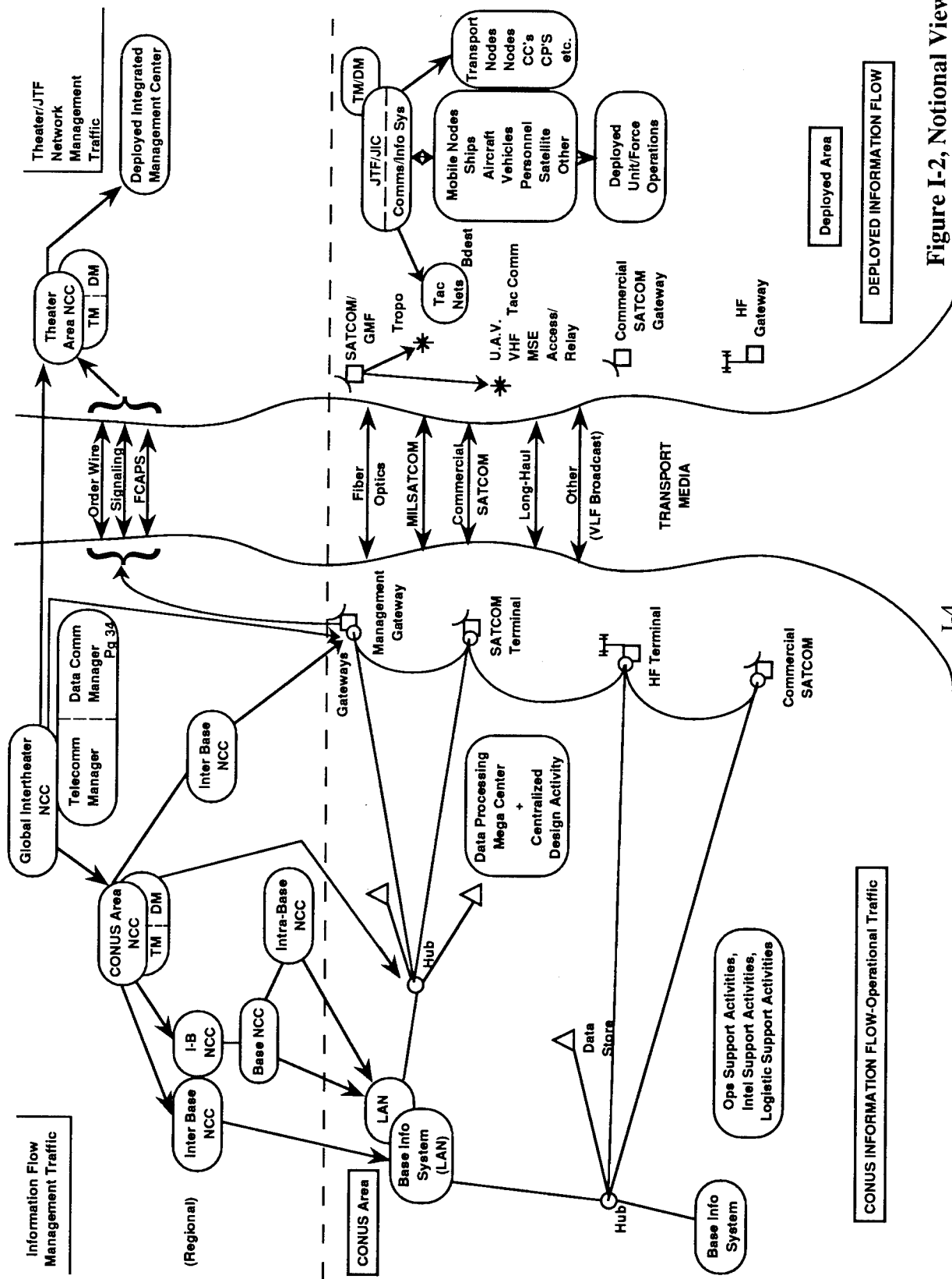


Figure I-2, Notional View of C4I

### Notional View of C4I

Figure I-2, provides a notional view of many of the components of the C4I concept; one of efficient information flow in support of the deployed warrior on the battlefield. Its view is concerned with information flow within the CONUS, transport to/from OCONUS and within the theater of conflict. The top portion of the figure is concerned with the elements of information flow management, while the bottom portion of the figure depicts the actual flow of the information itself. Within the CONUS reside numerous data bases and application programs designed to support operational, intelligence, logistics and planning functions. In the theater the JTF manages the flow of information and ensures the Warrior has sufficient C4I resources necessary to perform the mission effectively. The systems described in the Joint C4 SDD fall into one or more of the elements in this construct of information management. Within this notional view or construct, the relationships among programs can be depicted. In generalized terms, the CONUS is the repository of vast amounts of information and the application programs needed to process and tailor the data. In theater (OCONUS), the Warrior has the C4I tools with which to employ forces and prosecute military operations. The Warrior has the ability to pull information in a basically transparent mode in the amount and form desired to support his operations. The long-haul and local information transfer capabilities are to a large degree interoperable and mutually supportive. The Warrior's C4I capacity requirements can be managed in near real time by integrated network management. Value Added Networking will be available to facilitate exercising the network capabilities.

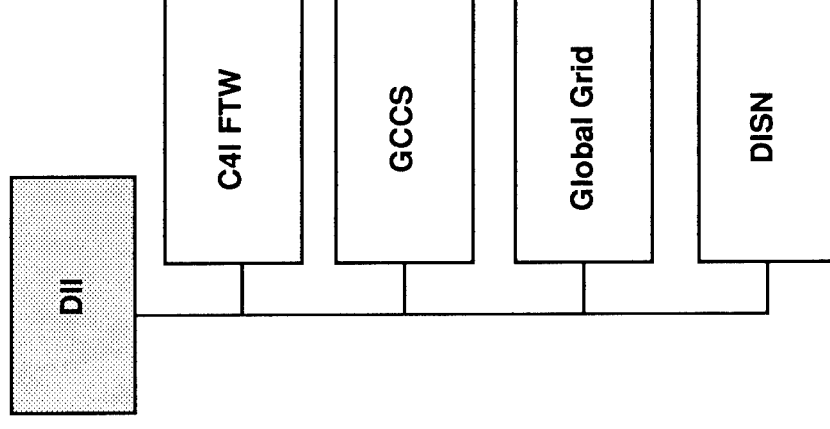
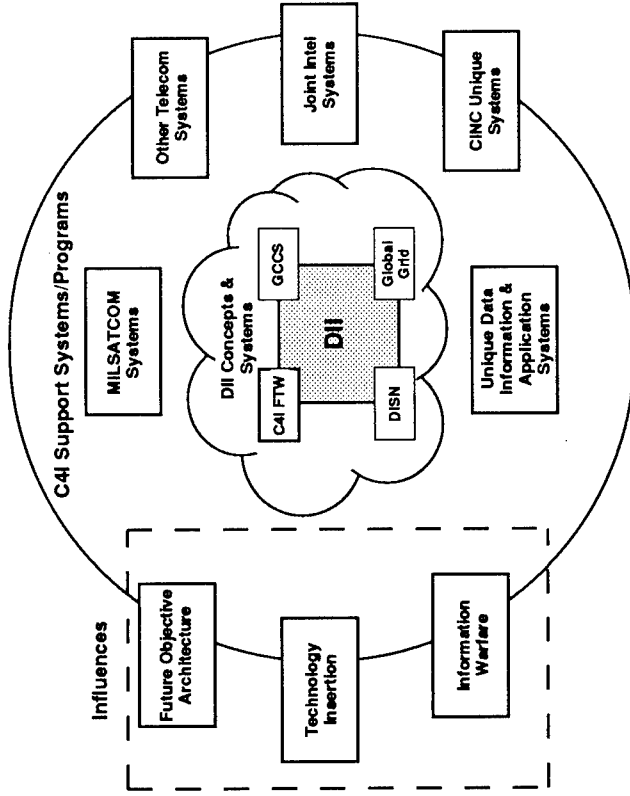
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# **Section I - Chapter 1**

## **Defense Information Infrastructure**

# DII Overview

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### DII

- Consists basically of concepts for the C4I FTW, DISN, GCCS, and Global Grid programs
- A seamless, global, standards-based end-to-end architecture
- Provides assured, flexible, and affordable information services to the warfighter
- Encompasses information transfer and processing resources, including information and data storage, manipulation, retrieval, and display
- A shared system of computers, communications, data, applications, security, people, training, and other support structure

Figure I-1-1, DII Overview

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# Defense Information Infrastructure

The Defense Information Infrastructure concept is that of a seamless, global, standards based end-to-end architecture that provides assured, flexible and affordable information services to the warfighter. The DII encompasses information transfer and processing resources, including information and data storage, manipulation, retrieval, and display. In greater detail, the DII is the shared or interconnected system of computers, communications, data, applications, security, people, training and other support structure, serving the DOD's local and worldwide information needs. The DII, first, connects DOD mission support, command and control, and intelligence computers and users through voice, data, imagery, video, and multimedia services; and, second, provides information processing and value-added services to subscribers over the DISN. Figure I-1-1, The DII Overview, depicts the key elements of the concept for future C4I support to military operations. The DII essentially consists of concepts for the C4IFTW, DISN, GCCS, and Global Grid programs.

The C4IFTW program is a concept that provides the common global vision necessary to focus independent efforts toward a series of common objectives. It is a concept that directly links and supports the Warriors - combat troops of all Services - who engage in military operations in a rapidly changing world. Its implementation will provide a global C4I infrastructure that is reliable, secure, responsive, and survivable. It furnishes and presents essential information to the Warrior in standard formats whenever and wherever the Warrior directs.

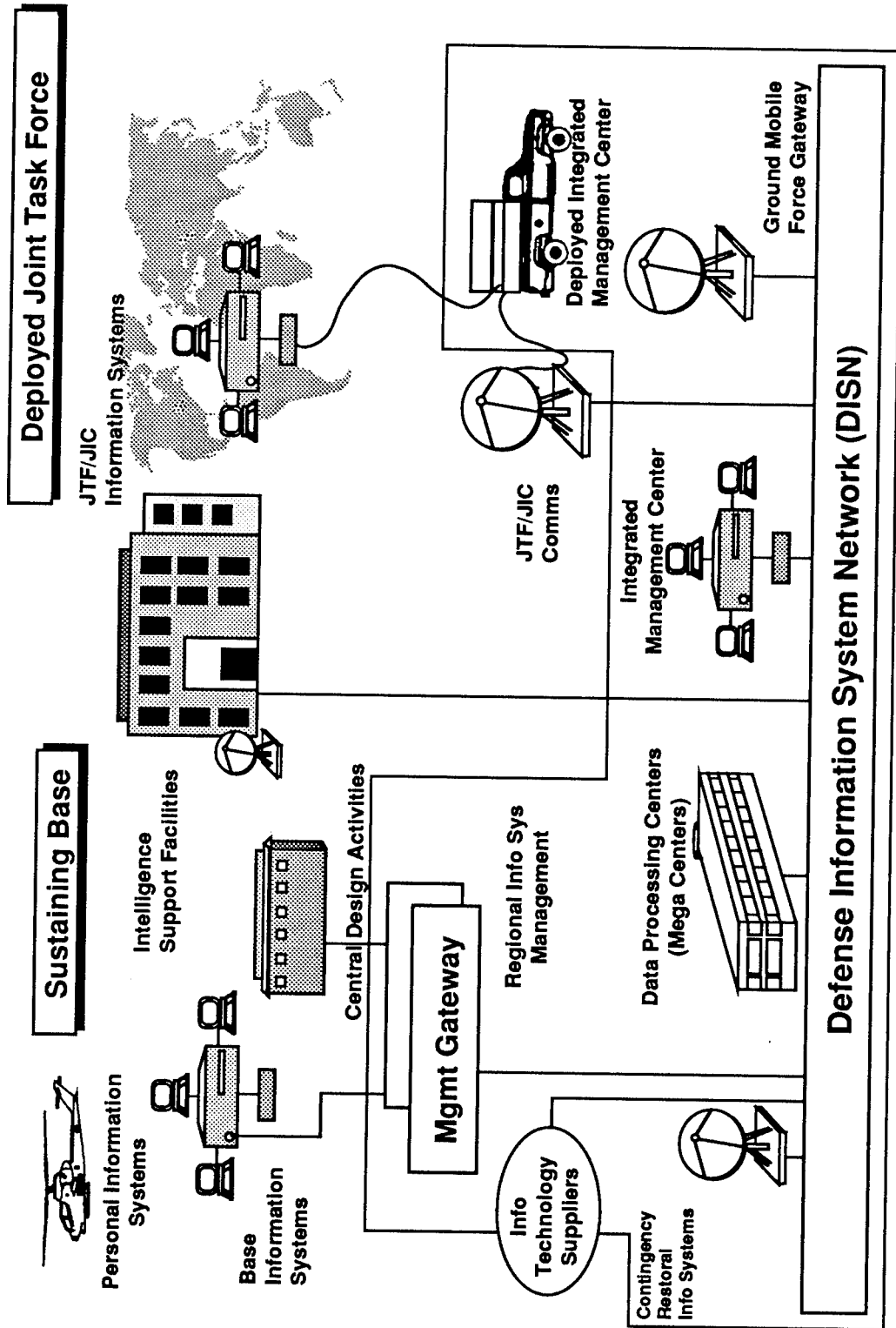
DISN, as a subset of DII, is the global telecommunications infrastructure which provides end-to-end information transfer and value-added network services. The DISN architecture is designed to provide an integrated network service to meet all DOD requirements for voice, video, and data communications. It does not, however, include information use and creation. It will build on Service and Agency programs to establish high-speed common-user backbone connectivity. It will bundle individual circuits into a managed, high-capacity system for cost savings.

The primary purpose of the Global Command and Control System (GCCS) is to create and evolve to a broadly connected joint system of joint systems; one that provides total battle space information to the warrior. It is directly supportive of the C4I For The Warrior concept. The C4I information infrastructure will provide seamless connectivity for the warrior to "plug-in" and obtain information needed to conduct operations any place at any time.

The primary purpose of the Global Grid program is to provide high capacity, high data rate connectivity to the warrior on the battle field. It builds upon current C4I systems by augmenting these systems with newer telecommunications technologies.

# DII Architecture

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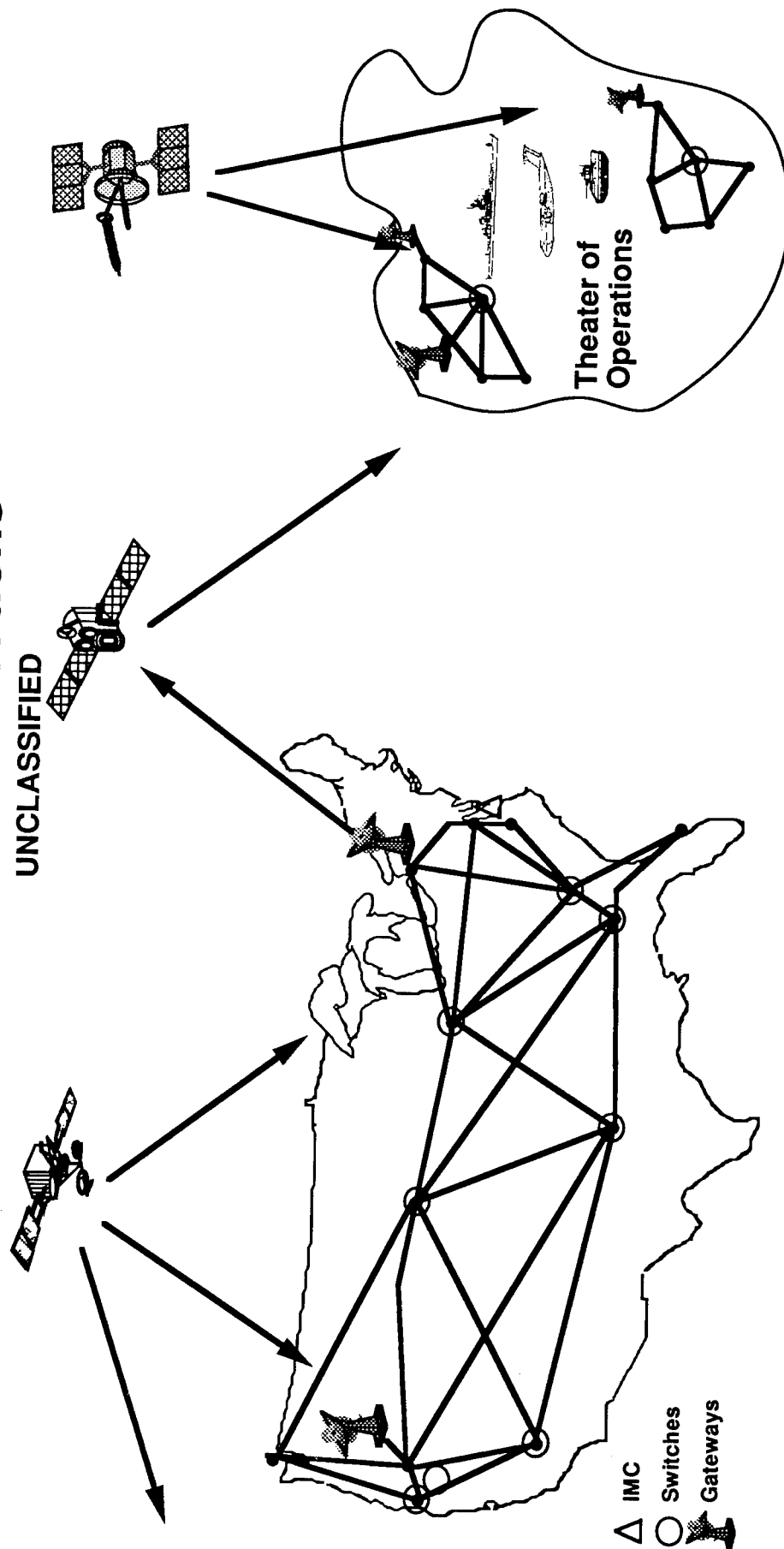


## **DII Architecture**

Figure I-1-2, The DII Architecture, depicts the overarching concept of the DII to include the need to keep the information management process on a business like basis while servicing the warrior. Each of the key elements cited in the architectural overview consists of several component systems. For instance, the Central Design Activities will be concerned with the development of software for increasing the efficiency and effectiveness of telecommunication services. Also, the Deployed Integrated Management Center will help provide network planning and control in the deployed area. The left side of the figure depicts essentially CONUS fixed and mobile communications systems, the software support of the Defense Information Systems Network (DISN) and the management schema for managing and controlling the transfer of information among the elements of the architecture. On the right side of the figure the Deployed Joint Task Force is depicted with the joint interoperable assets which are assigned. The DISN effects the interfaces between the strategic long-haul communication and the local theater/tactical communications of the Warrior.

# DII Communications

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Network Management
<ul style="list-style-type: none"> <li>• Centralized, Integrated Management and Control</li> <li>• Dynamic Resource Allocation</li> <li>• Performance Monitoring and Management Control</li> <li>• Dynamic Network Reconfiguration</li> <li>• Automated Reports</li> </ul>

Transmission & Switching
<ul style="list-style-type: none"> <li>• Fiber Optic</li> <li>• SATCOM</li> <li>• Troposcatter</li> <li>• HF</li> <li>• Los Microwave</li> <li>• UHF</li> <li>• Cable</li> </ul>

Value Added Services
<ul style="list-style-type: none"> <li>• Voice</li> <li>• Data</li> <li>• Fax</li> <li>• Messaging</li> <li>• Imagery</li> <li>• Video</li> <li>• Billing</li> <li>• Worldwide Directory</li> <li>• Paging, Conferencing</li> <li>• Access to On-line</li> <li>• Library Services</li> <li>• Worldwide On-line Training</li> </ul>

I-1-6

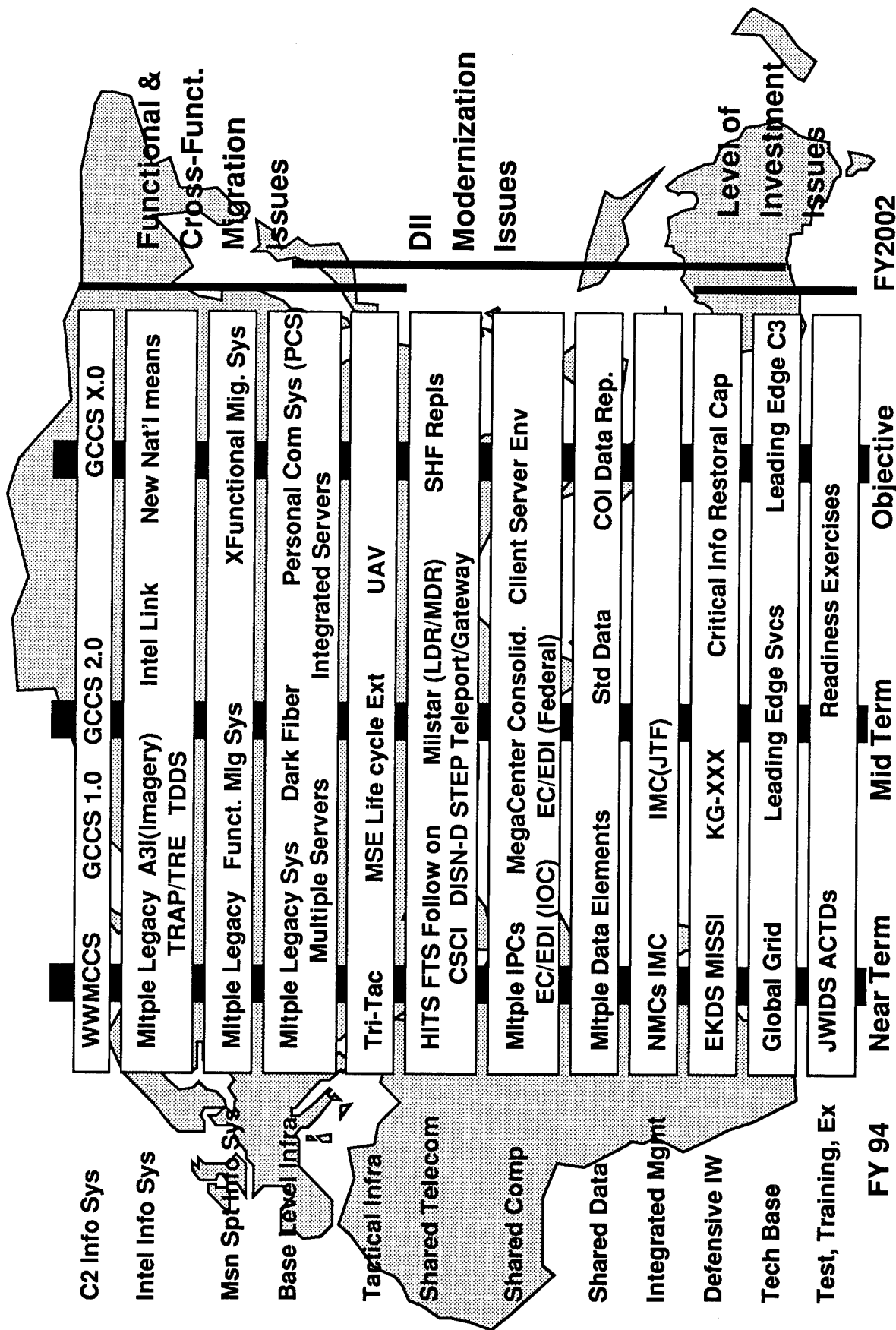
Figure I-1-3, Defense Information Infrastructure (DII) Communications  
JS-94.002

### **Defense Information Infrastructure (DII) Communications**

Figure I-1-3, Defense Information Infrastructure (DII) Communications, depicts the notional flow of information. It depicts the principle means of long-haul connectivity, SATCOM and optical fiber. The DII support exists in three categories: Transmission & Switching; Network Management; and Value Added Services.

# DII Roadmap - Top Level View

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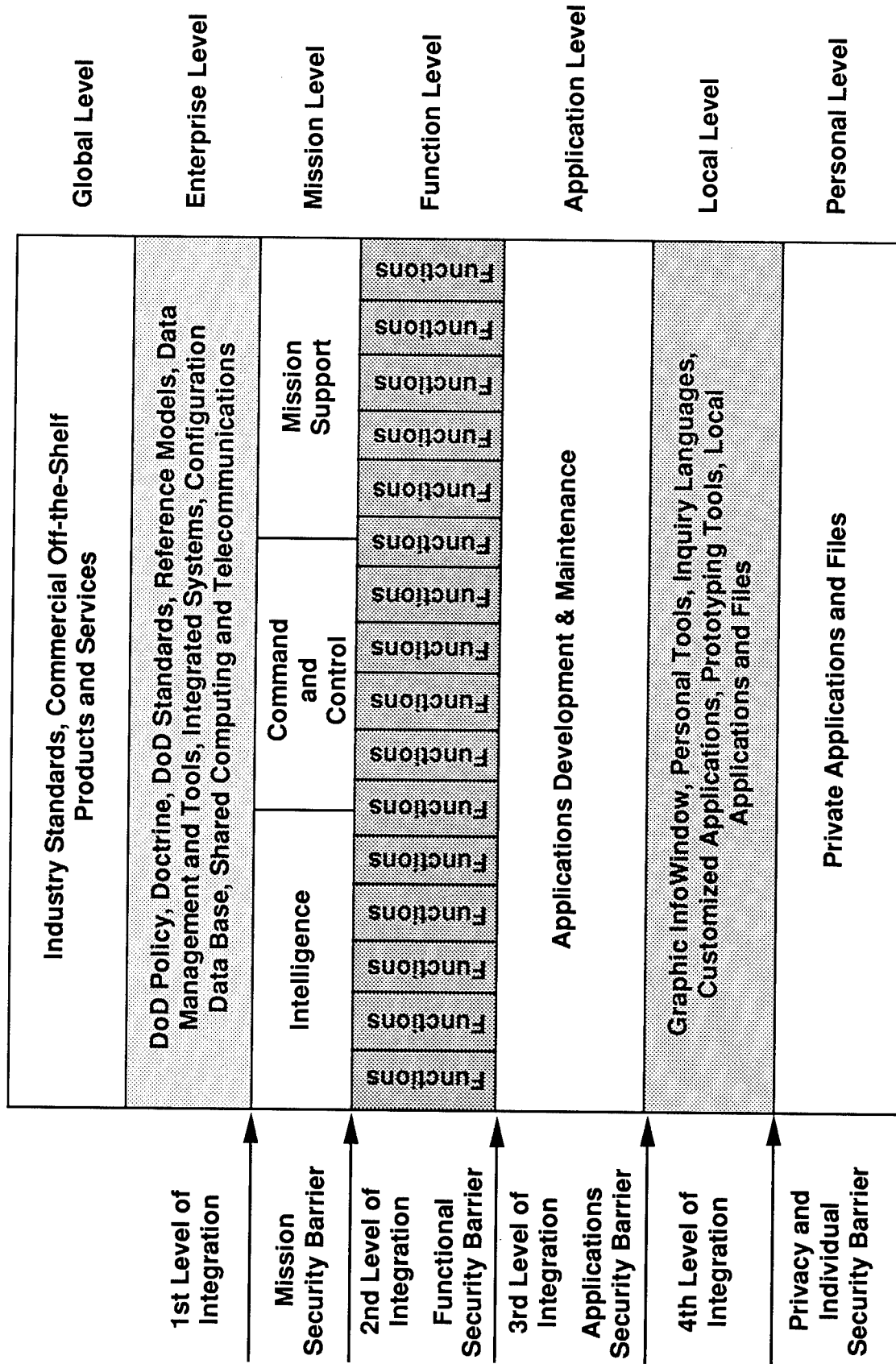


### **DII Roadmap - Top Level View**

Figure I-1-4, DII Roadmap - Top Level View, provides a notional view of how C4I will evolve toward an objective system which will maximize the interoperability among systems in the out years. In line with each of the categories listed on the left are key programs within the category which are evolving toward an objective system. The entries on the time lines represent the major areas of funding issues as the DII evolves. The collection of categories and programs provide insight into the overall scope of the DII.

# Levels Of Integration in the Defense Information Infrastructure

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## DII Levels of Integration

Components of the DII, for analysis can be considered to reside at one or more of six levels of management and control. Figure I-1-5, DII Levels of Integration, depicts these six levels.

Level 1: The *enterprise level* includes those elements of information management that are mandatory across the entire Department; i.e., DOD policy and doctrine, technical and data standards, reference models and technical architectures, methods and tools, and shared computing and telecommunication services.

Level 2: The *mission level* includes the major missions of the Department (Command and Control, Intelligence, and Mission Support, where mandatory DOD-wide functional and technical requirements are supplemented with mission-specific requirements and capabilities).

Level 3: The *functional level* includes the functional areas and functional activities of the Department, and the subject-matter databases that support them. OSD Principal Staff Assistants have the responsibility, authority, and accountability to resolve (or ensure that others resolve) functional and technical integration issues within their functional areas.

Level 4: The *application level* includes the development, maintenance, and operation of the information system applications that provide required automation support to the department's functions. Here are the migration systems and standard systems that process the Department's data. Integration within this level encompasses system interoperability, data sharing, and other technical issues that enable the efficient operation the Department's information technology and information services.

Level 5: The *local level* addresses customer support requirements that involve integration between level 4 and level 5. Boundary integration issues deal with stability and consistency of the human-machine interface to enhance local productivity by insulating the user from the unique characteristics of individual systems at the application level.

Level 6: The *personal level* serves to preserve privacy, individual choice, and personal preference at the desktop or workstation. Level six integration between the local and personal management levels occurs through local system administrators, LAN managers, and help desks personnel whose action are guided by the standards, facilities, accesses and controls prescribed at higher levels.

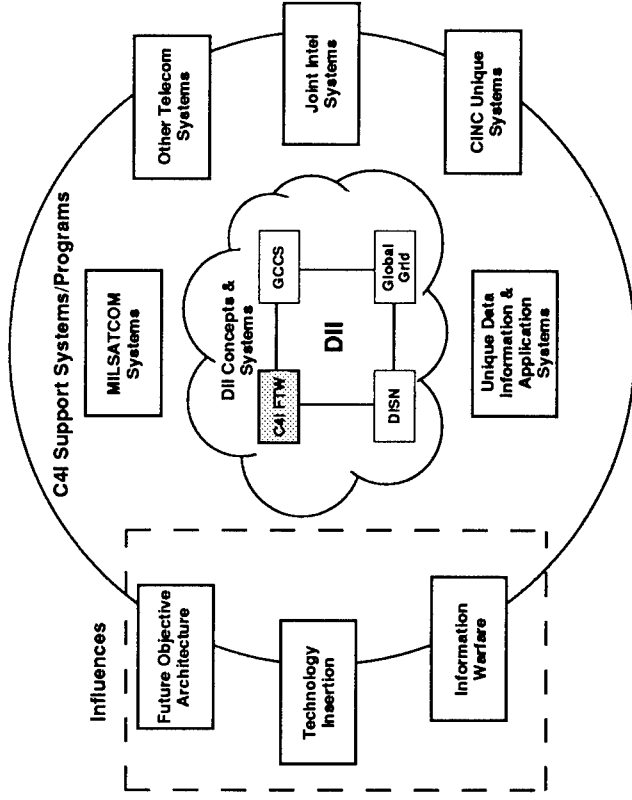
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# **Section I - Chapter 2**

## **C4I For the Warrior**

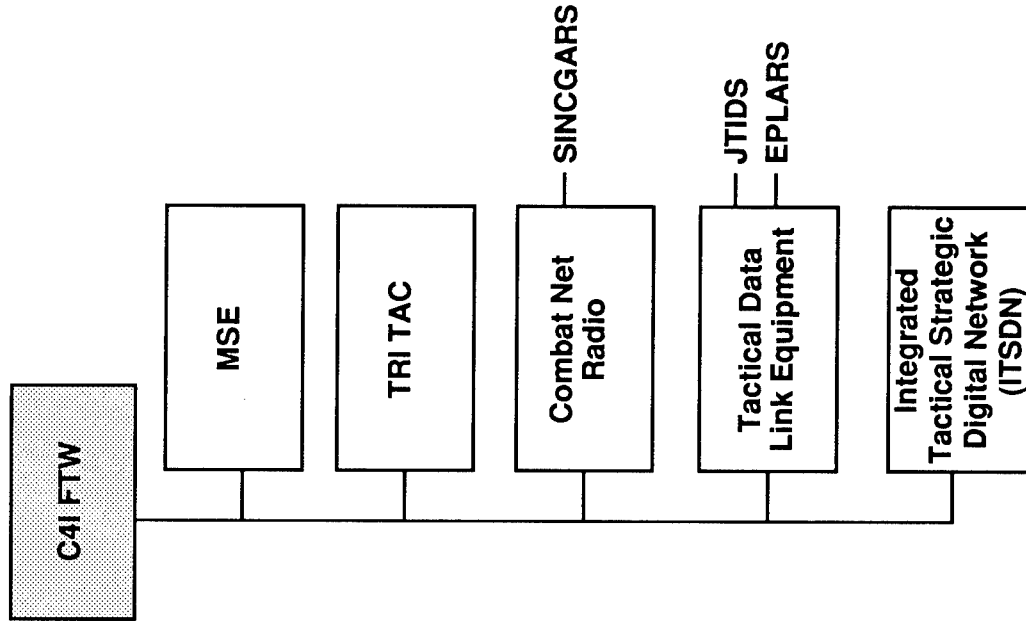
# C4I For The Warrior Systems

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## C4I FTW

- A unifying C4I concept that stresses interoperability and seamless connectivity
- Will allow any Warrior to perform any mission - any time any place; is responsive, reliable, secure; and is affordable.
- Provides: Accurate and complete pictures of the battlespace; timely and detailed mission objectives; and a clear view of targets.



I-2-2

Figure I-2-1, C4I For the Warrior Systems

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## C4I For the Warrior

C4I for the Warrior is a concept that provides the common global vision necessary to focus independent efforts toward a series of common objectives. It is a concept that directly links and supports the Warriors - combat troops of all Services - who engage in military operations in a rapidly changing world. Its implementation will provide a global C4I infrastructure that is reliable, secure, responsive, and survivable. It furnishes and presents essential information to the Warrior in standard formats whenever and wherever the Warrior directs. It will bring to the Warriors: accurate and complete pictures of their battlespace; timely and detailed mission objectives; and clear views of their targets. Interoperability is ensured through the adherence to a common set of standards, a common operating environment, and rigorous testing for conformance and interoperability. Additionally, once interoperability has been achieved, it will be maintained through configuration management. Technology advances are incorporated as they mature in the areas of:

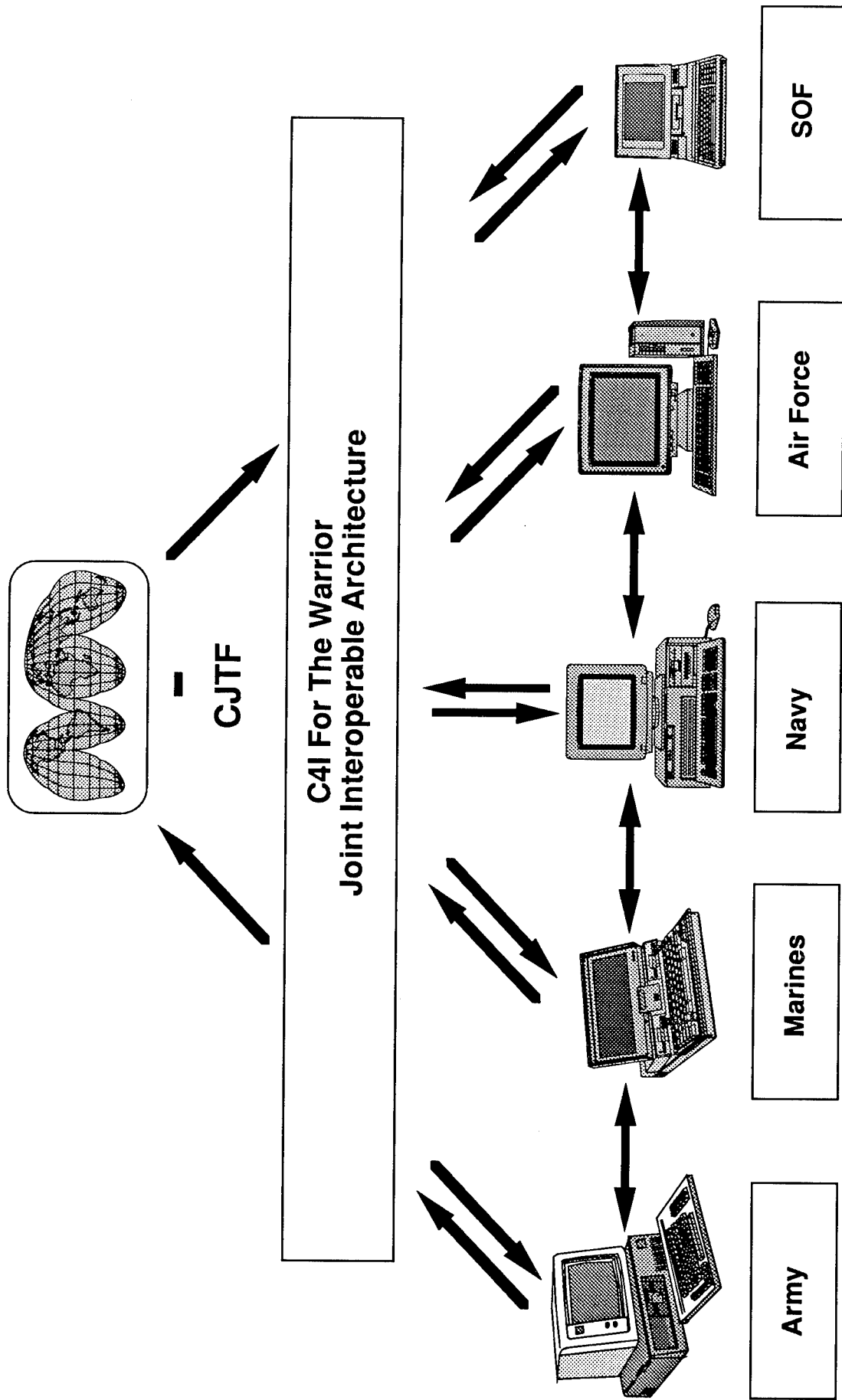
- Multilevel information system security applications;
- International standards;
- Common database elements;
- Standard data elements; and
- Standard interface protocols.

The C4IFTW has four key elements: Warrior Terminal; Warrior's Battlespace; Infosphere; and Battlespace. The C4I For The Warrior envisions an information infrastructure which provides for: seamless operations; complete interoperability; common operating environment; flexible, modular C4I packages tailored to the Warrior's needs; horizontal and vertical C2; over-the-air updating; Warrior pull on demand; real-time decision aids; global resource command and control; adaptive safeguards; and visualization.

Figure I-2-1, C4I For The Warrior Systems, identifies some key systems of which the C4IFTW is comprised. These are: The Mobile Subscriber Equipment (MSE); Tri-Service Tactical Equipment (TRI TAC); The Combat Net Radio (e.g. SINCGARS); and Tactical Data Links (e.g. JTIDS and EPLRS). The C4IFTW also includes programs to effect more efficient interfaces between Strategic and Theater/Tactical interfaces (e.g. the MSCS, ITSDN and STEP).

# Joint Task Force C4I Tomorrow

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I-2-4

Figure I-2-2, Joint Task Force C4I Tomorrow  
JS-94.002

### **Joint Task Force C4I Tomorrow**

Figure 2-2, Joint Task Force C4I Tomorrow, shows the objective interoperability among the Services' systems in joint operations. At the joint or combined force planing level, the commander must be able to integrate fully the component combat resources. Currently the Warrior C4I resources are not sufficiently interoperable. These resources were designed to meet individual CINC and Service organizational structures and mission needs and were based on a vertical military chain of command structure. Some shortcomings have been identified:

- The existing inventory of military C4I is not adequate to support joint or combined operations with large and diverse assigned components
- Although both newer technology satellite communications and computer and radio system applications are valuable, they are not totally modular or interoperable
- Military C4I has not been able to take full advantage of commercial technology.

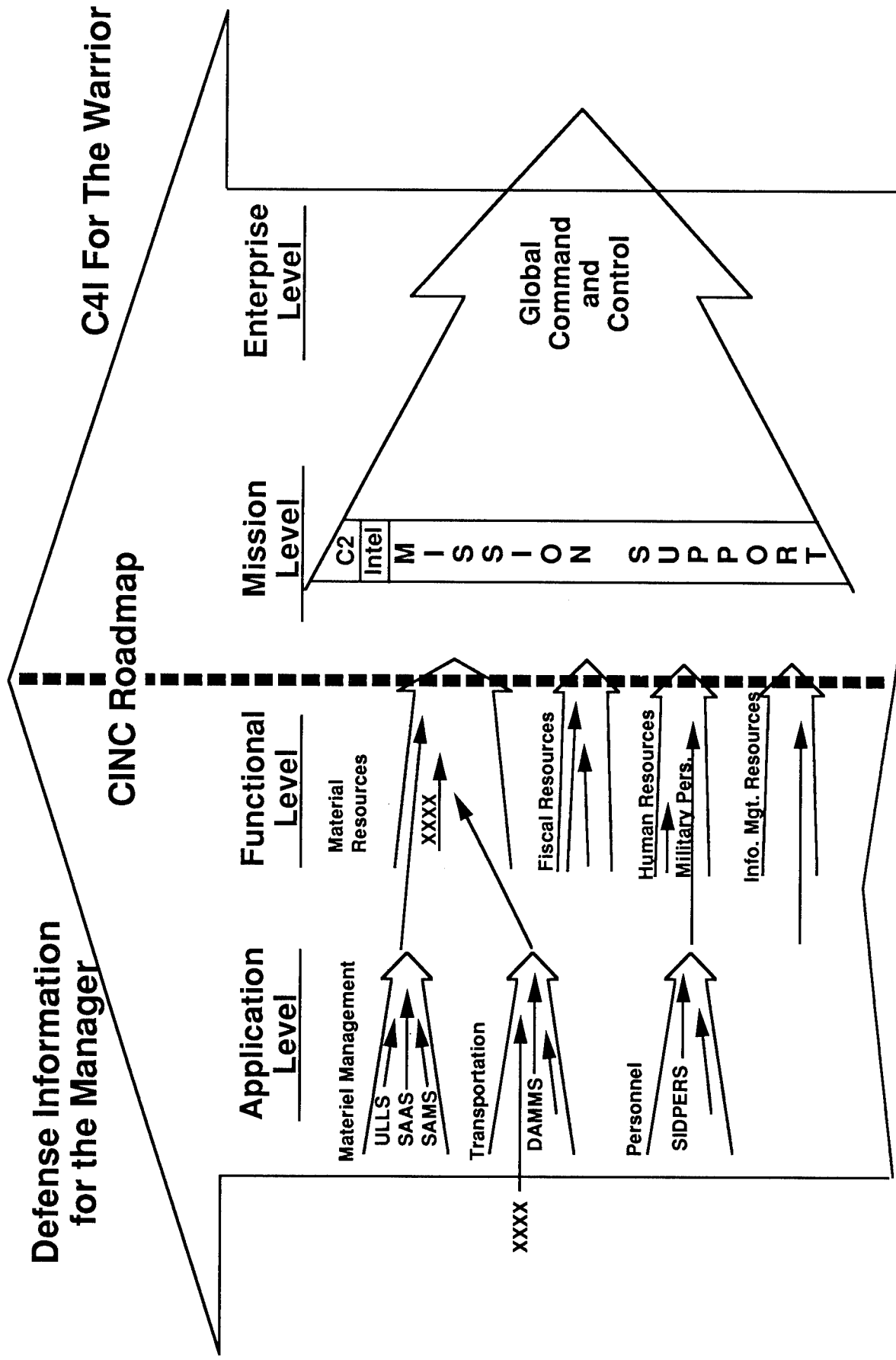
The needs for enhancement in the new objective C4IFTW architecture have been identified as follows:

- Replace manually distributed, highly vulnerable, and logistically cumbersome paper codes and key material with electronic keys
- Achieve interoperability for all media transmissions systems; voice, data, message, and video.
- Establish software configuration management.
- Test and validate the integration capabilities of C4I systems.
- Implement technical interface standards
- Place management and control of C4I functions in the hands of the Warrior during combat.

As with components of the fighting force, all parts of the C4I systems supporting the Warrior must not only work but must also work in unison if they are to be operationally effective.

# Roadmap/Strategy Integration

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I-2-6

Figure I-2-3, C4IFTW Road Map  
JS-94.002

### **C4IFTW Road Map**

Figure I-2-3, C4IFTW Road Map, depicts the designed evolution of the program. All DOD information contributes to, or supports the use of military instruments of power; consequently information domains of DOD managers, military commands, and military forces overlap. The evolution of information systems capability in the mission support domain will have substantial impact on military planners and commanders. As information systems support to functional areas like material resources are consolidated and evolved to more effective and efficient capability, the enhanced ability to provide information in the form and substance desired will improve the capability to support the Warriors, military commanders and planners. Changes in information systems capability in enterprise functional areas need to be matched by continued capability to more effectively provide needed information at the Warrior level.

The end objective for information systems evolution in all the enterprise domains (C2, Intelligence, Mission Support) is to have a fully integrated information management capability which is part of the global command and control capability providing effective and efficient information to decision makers, commanders, and Warriors, when and where needed. This CINC roadmap depicts the evolution and enhancement of both the operational C4I and defense support C4I in a balanced manner, while at the same time depicting the typical flow of support from the supporting elements of the Services/Agencies to the Warrior in the horizontal direction. It is essential that a balance be maintained among all the systems as C4I systems migrate toward the future objective C4I system of the 21st century. This balance is ensured and maintained in part by a close adherence to joint systems protocols and standards for interoperability, and where possible the joint use of developing software and hardware.

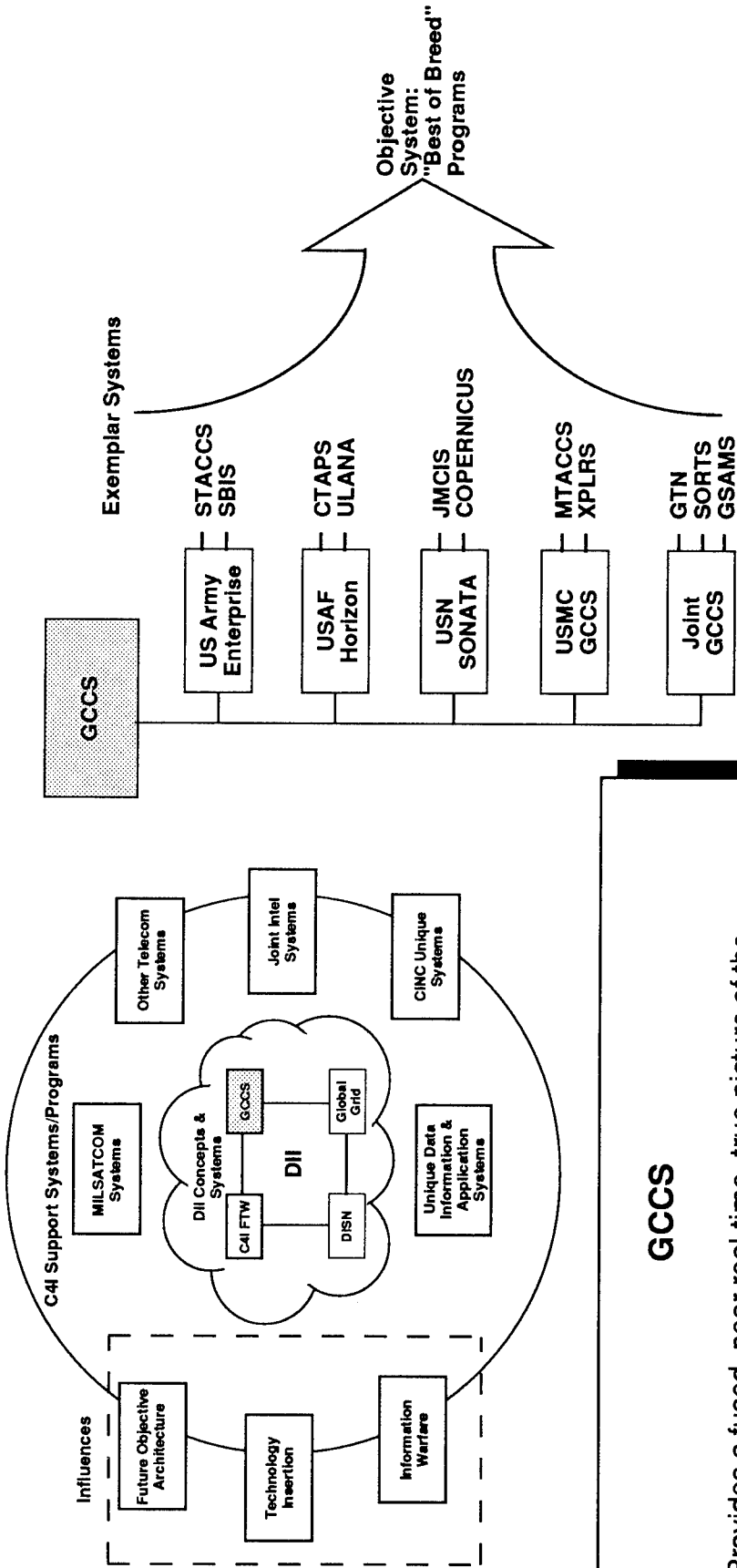
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# **Section 1 - Chapter 3**

## **Global Command and Control System**

# Global Command and Control System

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## GCSS

- Provides a fused, near real-time, true picture of the battlespace
- Provides real-time battlefield awareness to CINCs
- Composed of ongoing Service C4I modernization programs (e.g., Horizon, Enterprise, Sonata and GTN)
- Will use "Best of Breed" criteria to select application programs for multi-service use (e.g., USAF ATO)

I-3-2

Figure I-3-1, Global Command and Control Systems

JS-94.001

# Global Command and Control

The primary purpose of the Global Command and Control System (GCCS) is to create and evolve to a broadly connected joint system of joint systems; one that provides total battle space information to the warrior. The Chairman's policy is that all C4I systems are joint. The C4I information infrastructure will provide seamless connectivity for the warrior to "plug-in" and obtain information needed to conduct operations any place at any time. Figure I-3-1, Global Command and Control System, depicts major Service efforts to evolve toward an interoperable system of systems and cites exemplar system which will contribute to that objective. In the process the exploitation of dual-use technology will be central to future defense planning and spending.

## General Description:

- Provides a fused, near real-time, true picture of the battlespace
- Provides open, modern, client-server systems
- Provides real-time battlefield awareness to CINCs/high level military officials
- Uses sensor, intelligence, and plans data as principal input
- Uses an evolutionary acquisition strategy
- Has core functions to include;
  - ◊ Crisis Planning,
  - ◊ Force Deployment
  - ◊ Force Status
  - ◊ Air Operations
  - ◊ Intelligence, and
  - ◊ Narrative Information

- Consists of three elements;
  - ◊ Core common software
  - ◊ Common standards, and
  - ◊ CINC unique software
- Composed of ongoing Service C4I modernization programs;
  - ◊ US Army - Army Global Command and Control System (AGCCS) Enterprise Program - VISION
  - ◊ USAF - HORIZON Initiative
  - ◊ US Navy - SONATA
  - ◊ USMC - Marine Global Command and Control System (MGCCS)

**Specific Programs include:**

- DOD wide
  - ◊ Integration of JOPES, SORTS and GTN
- USAF Specific Programs (HORIZON Initiative)
  - ◊ Unified Local Area Network Architecture (ULANA II)
  - ◊ Global Transportation Network (GTN)
  - ◊ Contingency Theater Automated Planning System (CTAPS)
  - ◊ Advanced Tactical Airborne Reconnaissance System (ATARS)
  - ◊ COMPES
  - ◊ WMP
  - ◊ WISMIS
  - ◊ CFMS

- US Army Specific Programs (Enterprise or Army GCCS) (VISION)
  - ◊ Army Tactical C2 System (ATCCS)
  - ◊ Common Hardware and Software II (CHS 2)
  - ◊ Standard Theater Army C2 Systems (STACCS)
  - ◊ Sustaining Base Information Services (SBIS)
  - ◊ Combat Service Support Control System (CSSCS)
- US Navy Specific Programs (SONATA)
  - ◊ Joint Maritime Command Information System (JMCIS) to include OSS and NTCSS-A, NTCSS, TSC, OBU, TESS-NITES, JDISS
  - ◊ TAMES, JTIDS/Link 11, OSIS, CASES, JFACC-Afloat/ATO
- US Marine Corps Specific Programs
  - ◊ MTACCS
  - ◊ XPLRS
- Joint Staff
  - ◊ Crisis Management ADP System (CMAS)

**The C4I/TW has four elements:**

- Warrior Terminal
- Warrior's Battlespace
- Infosphere
- Battlespace

**C4I Technology is in three critical areas:**

- Artificial Intelligence
- Multilevel security
- Data compression and transmission

# GCCS Core Architecture

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## INTEGRATED USER ENVIRONMENT

Customer  
Supported  
Programs/  
Applications

<u>USN</u> OSS NTCS-A TDA's CASES SORTS	<u>USAF</u> CTAPS ULANA SORTS	<u>USMC</u> IAS MTACCS XPLRS SORTS	<u>USA</u> STACCS MCS ASAS SORTS	<u>JOINT</u> JDISS/JSIPS DART LOGSAFE JFAST GTN JTIDS ADNET IMAGERY JSORTS	<u>ALLIED</u> OSS/CCIS
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## Application Core Services

Common Software Support Modular AIPs	Database Support System	Mapping Weather Readiness	E-Mail Office Automation VTC	Integrated Intelligence Support	Baseline Logistics Support	Display Briefing Support	AMHS Profiler Parsing JUDI Functionality	Integrated Mission Planning DB Access	Sensor/ Track Process Correlation
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## Open System Baseline (Specifications)

(DODIIS, UNIX (POSIX), TCP/IP Ethernet, X-Windows, Motif, Relational Databases)  
(Standard Code: C, C++, ADA, Follow-on 4th Generation Languages)

Advanced Processors

COMMON CORE SOFTWARE ENGINE

### **GCCS Core Architecture**

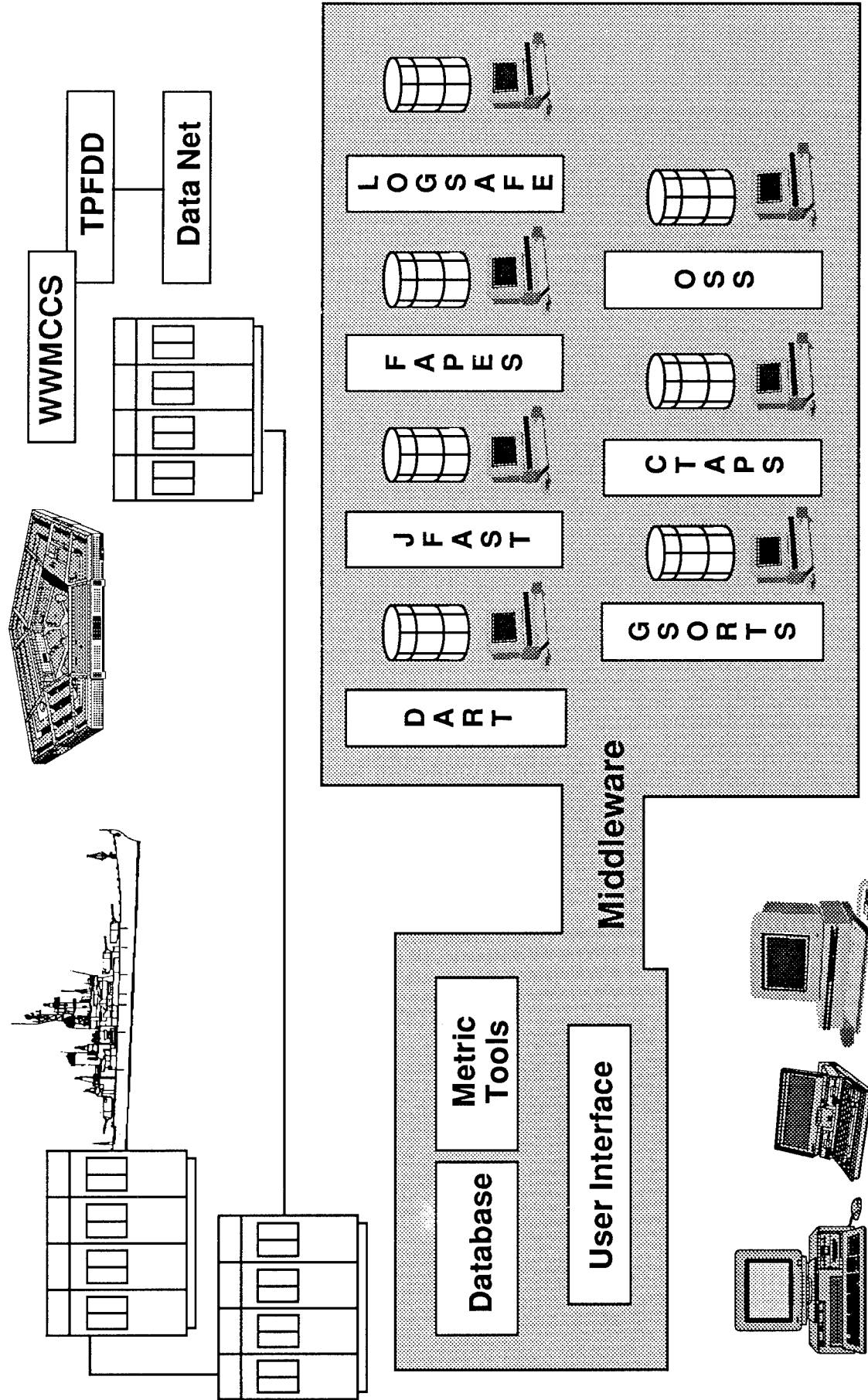
Figure I-3-2, GCCS Core Architecture, depicts the key elements of the GCCS "system of systems". The top portion of the figure displays the Service/agency users and typical current customer supported programs/applications which are associated with each user. At the bottom of the figure typical application core services are displayed. Open System Baseline specifications cite a number of software languages and protocols which support the GCCS. The overall objective is to attain a high degree of commonality and interoperability and shared use of the core services and program applications.

The Joint Staff is looking at the "best of breed" in all Services C2 enhancement programs to help determine what systems can successfully be integrated into a Joint Service GCCS in the future. The Navy's JMCIS will serve at the "shell that everything will be built upon". In terms of future applications, such as electronic maps, to be plugged into GCCS, the services "will nominate (their applications)" for selection.

The Joint GCCS has the Global Transportation Network (GTN) as a component. The GTN will globally track DOD personnel and cargo moving on land, sea and in the air. The GSORTS, designed to display unit readiness, allows commanders to constantly track the movement of combat units, weapons and supplies. Joint Operations Planning and Execution System (JOPES) is being migrated to GCCS.

# Global Transportation Network

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I-3-8

Figure I-3-3, Global Transportation Network  
JS-94 002

### **Global Transportation Component of the GCCS**

Figure I-3-3, Global Transportation Network, depicts the GTN and its relationship to the Joint Operations Planning and Execution System (JOPES). The purpose of JOPES is to help plan for and execute the deployment of US forces overseas. The JOPES Technology Improvement Program (TIP) modernizes and automates the JOPES system.

#### **JOPES General Description:**

- Used by the CINCs and the Joint Deployment Community in both deliberate planning and for Time Sensitive Operations (TOPS)
- Provides a powerful management information system and an on-line intercomputer interactive exchange of information throughout the community
- Produces the Time Phased Force Deployment Data (TPFDD)

#### **JOPES is used to:**

- Monitor, plan, and execute mobilization, deployment, employment and sustained operations
- Gives collateral support to the JSPD and the PPBS
- Provides one set of procedures for both deliberate and time sensitive planning
- Assist commanders in starting, stopping, or redirecting military operations
- Support peacetime, crisis, and wartime planning
- Support Course of Action development
- Ensure dissemination of timely, accurate and aggregated information
- Help identify shortfalls during the planning process
- Help expedite the development of "Estimates of the Situation"

JOPE Technical Insertion Program (TIP) application programs include: the Dynamic Analysis and Replanning Tool (DART); Force Augmentation Planning and Execution System (FAPES); the Logistics Sustainment Analysis and Feasibility Estimator (LOGSAFE); and the Joint Flow and Analysis System for Transportation (JFAST).

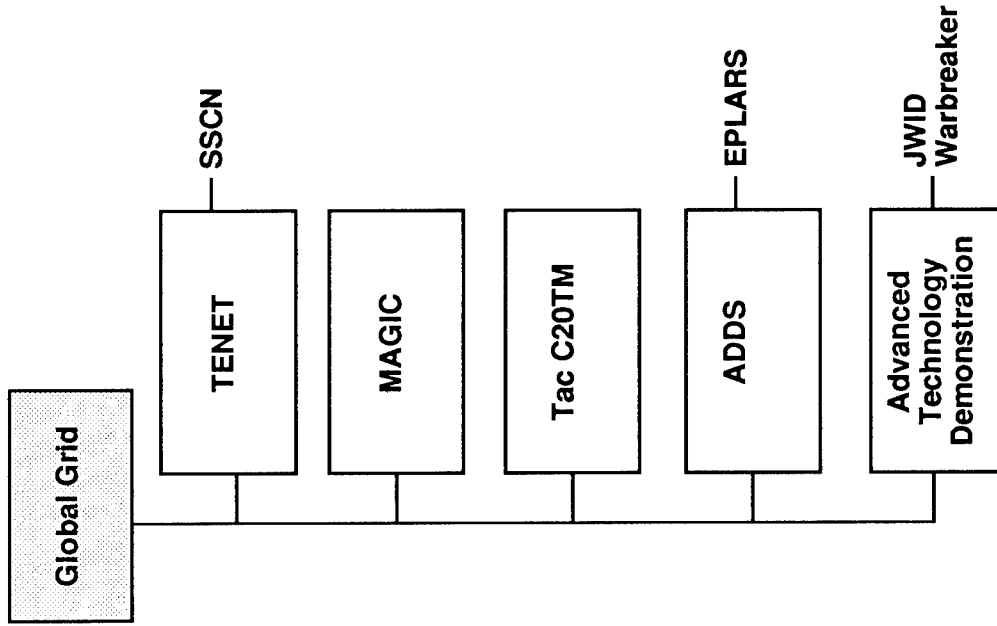
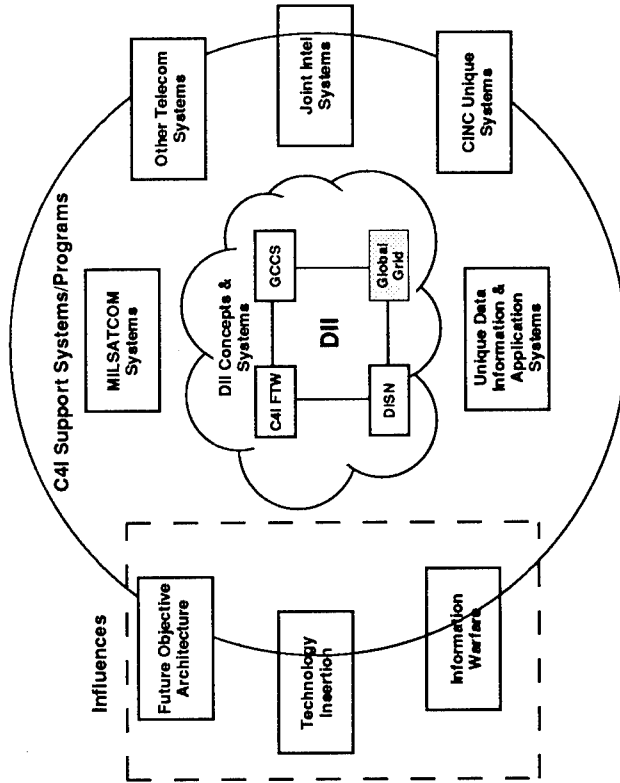
- DART provides a platform for creating, evaluating, and fielding additional planning decision aids. Automated tools to address OPLAN course-of-action evaluation and selection, deployment and execution planning, transportation feasibility estimates, and modeling and simulation activities.
- FAPES is used in the areas of manpower and mobilization analysis. Primarily a retrieval and reporting system.
- LOGSAFE provides stand-alone, deliberate planning, logistics sustainment analysis, feasibility estimation, resupply requirements generation, and appraisal of contingency plans.
- JFAST is used for estimating the flow of an overseas deployment. provides the capability to rapidly assist the transportation feasibility of strategic deployment from a lift asset capability and closure profile by depicting discrepancies among movement requirements and actual deliveries.

# **Section I - Chapter 4**

## **Global Grid**

# Global Grid

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### Global Grid

- Integrated set of advanced technology demonstrations
- Focuses on 4 key capabilities:
  - Adaption of existing Comm systems for seamless comm in the theater (e.g., TENET)
  - Development of more useable bandwidth systems
  - Improvements in mobility
  - Improvements in range
- TENET extends high capacity to warriors that cannot be reached by commercial links
- The SSCN provides an ATM communications network for high speed nodes as an operational test bed
- MAGIC is a gigabit WAN to help provide commanders with a common view of the battlefield

I-4-2

Figure I-4-1, Global Grid  
JS-94.001

# Global Grid

Global Grid is comprised of an integrated set of advanced technology demonstrations aimed at creating a jam-resistant, seamless, gigabit communications architecture across air, space and sea systems. The project is a component of the Pentagon's global surveillance and communications technology thrust. Global Grid is designed to demonstrate "capabilities for follow-on insertion" into another network: the Defense Information Systems Network (DISN). Global Grid will serve as a key source of critical technology for the DISN. The Global Grid will be a result of the integration of existing commercial and military technologies, rather than as reliance on new technological developments. The network will link soldiers at almost all levels of command to voice, data, imagery, and video sensors. Figure I-4-1, Global Grid, depicts some key elements of the program.

Global Grid focuses on four key capabilities:

- Adaptation of existing communications systems seamless communications in the theater;
- Development of more usable bandwidth systems;
- Improvements in mobility;
- Improvements in range.

The Global Grid Theater Extension Network (TENET) provides for the development of significantly expanded communications and capability. TENET develops technology to provide a secure and survivable network that extends military communications to warfighters that cannot be reached by commercial links. It is one of Global Grid's advanced technology demonstrations, which focus on creating a jam-resistant, seamless, gigabit communications architecture. It uses existing network technology to demonstrate that commercial communications infrastructure leased by DOD can effectively extend command and control capabilities to any location around the world. The Services' existing and planned communication systems, like Milstar network, will be critical elements that will fit into the Global Grid network as receivers and transmitters of signals.

In 1992, as a component of the Global Grid Program, the USAF initiated the development of the Secure Survivable Communications Network (SSCN) to design, develop, build, test and install an Asynchronous Transport Mode (ATM) communications network for five high-speed ATM nodes, each with its own management and control system. The configuration was called the Secure Prioritized ATM Network (SPANET). Included in the development is the capability to enable these nodes to use existing tactical and communications assets.

PROTEUS is an Army project which provides an operational prototype network delivering ATM technology and collaborative services to a variety of users worldwide.

Multidimensional Application Gigabit Internet Consortium (MAGIC) is a gigabit Wide Area Network (WAN) which is a component of the Global Grid designed to provide commanders with a common view of the battlefield.

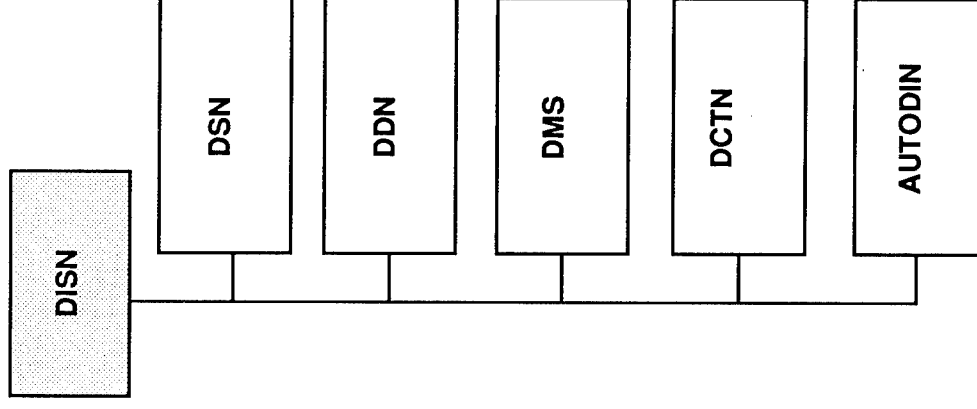
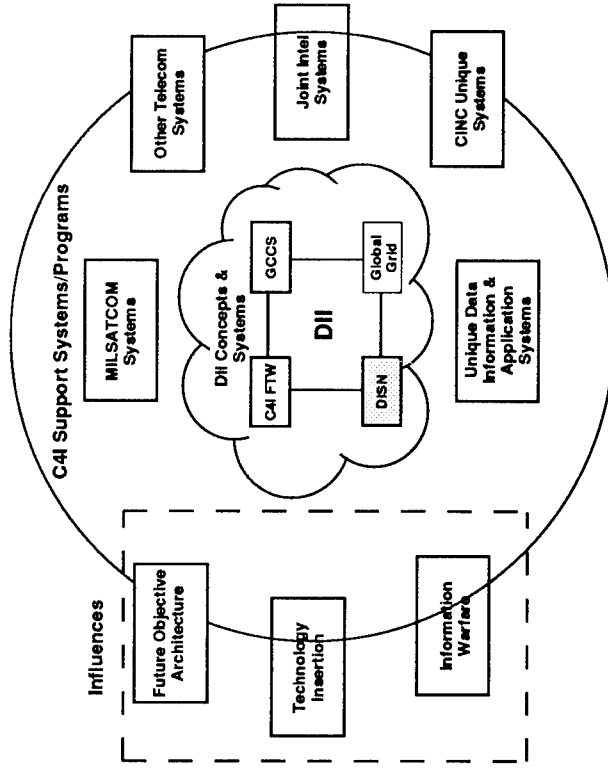
Tactical Command and Control On-the-Move (C2OTM) elements will require small/lightweight equipment. DOD will need multiband and software reconfigurable antenna to help provide this capability for high capacity connectivity.

# **Section I - Chapter 5**

## **Defense Information Systems Network**

# Defense Information System Network

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## DISN

- DOD information transfer infrastructure (Telecommunications) component of the DII
- Includes Local Area Networks and Wide Area Networks
- Key segments are: Transport infrastructure; Value-added Services, and Network Management
- Supports five major mission areas: Command and Control (C2); Intelligence; Business Operations; Other DOD Missions; and Non-DOD Missions.

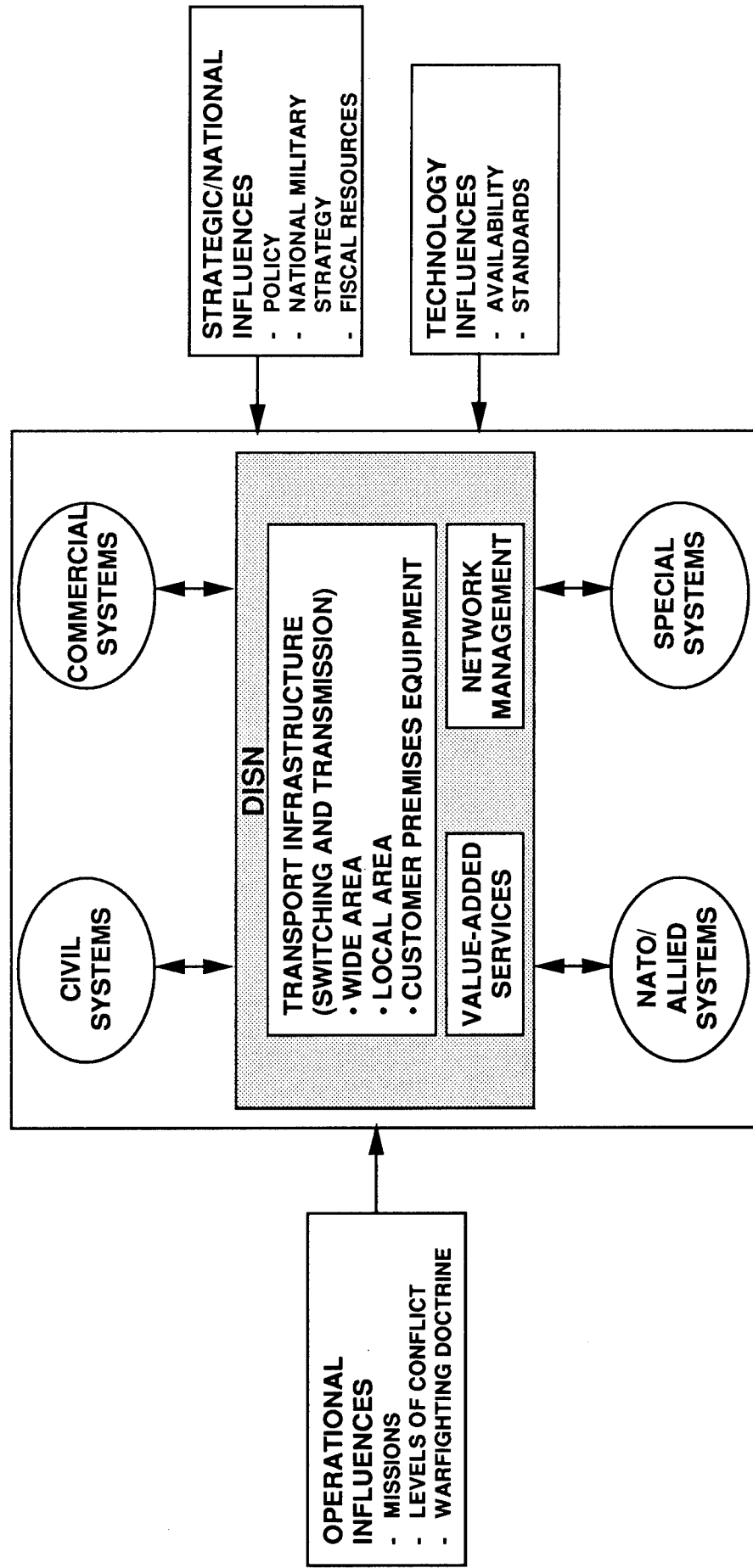
## Defense Information Systems Network

Figure I-5-1, Defense Information Systems Network, shows major components of the DISN, namely the circuit switched long-haul Defense Switched Network (DSN), the Packet Switched Defense Data Network (DDN), the multi-purpose Defense Commercial Telecommunications Network (DCTN), and the Defense Message System (DMS). In addition, there are programs to extend the DISN closer to the warrior by enhancing interfacing between the Strategic telecommunications resources, such as the DSN, and Theater/Tactical resources such as the MSE and TRI TAC networks. The DISN vision of the goal architecture is one that offers DOD opportunities to lower communications costs, reduce the inventory of disparate networks and numerous dedicated facilities, and provide advanced services. To attain the objective requires a single integrated architecture based on open systems standards, commercial-off-the-shelf (COTS) or Non-Developed Items (NDI) products and services, and extensive resource sharing. The emerging concept of the goal architecture is one of a multigigabit global grid. This global grid will permit Warriors, located anywhere in the world, aboard any platform, to quickly and reliably receive any information entering the grid that may be of operational value to them. The objective DISN will execute any request for information at any time and from any location with assurance that the networks will automatically find the desired information within the worldwide defense repositories and deliver it automatically to the Warrior in the form needed.

Value-added services, such as the DOD Directory, also will be featured in the goal architecture. This service will offer a single totally electronic system which supports all DOD queries for voice, data, imagery, and video communications. Interoperability with other directories will extend the reach of the directory services for DOD users.

# DISN Environment

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I-5-4

Figure I-5-2, DISN Environment

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## **DISN Environment**

Figure I-5-2, DISN Environment depicts an environment for the information transfer of information contained within the DII. The environment addresses current and planned telecommunications systems; the stresses under which telecommunications must support operational requirements; the mission and functions supported; the size and geographic distribution of the user population receiving services and support; and available technology and policies.

This information systems environment encompasses the various systems that support DOD missions and functions. Collectively, these missions are known as the Defense Information System (DIS). As a subset of DIS and the DII, DISN provides end-to-end information transfer and value-added services. The objective is to create a seamless telecommunications environment characterized by services needed by the Warriors and DOD personnel at large. The DISN environment is composed of the following three major building blocks:

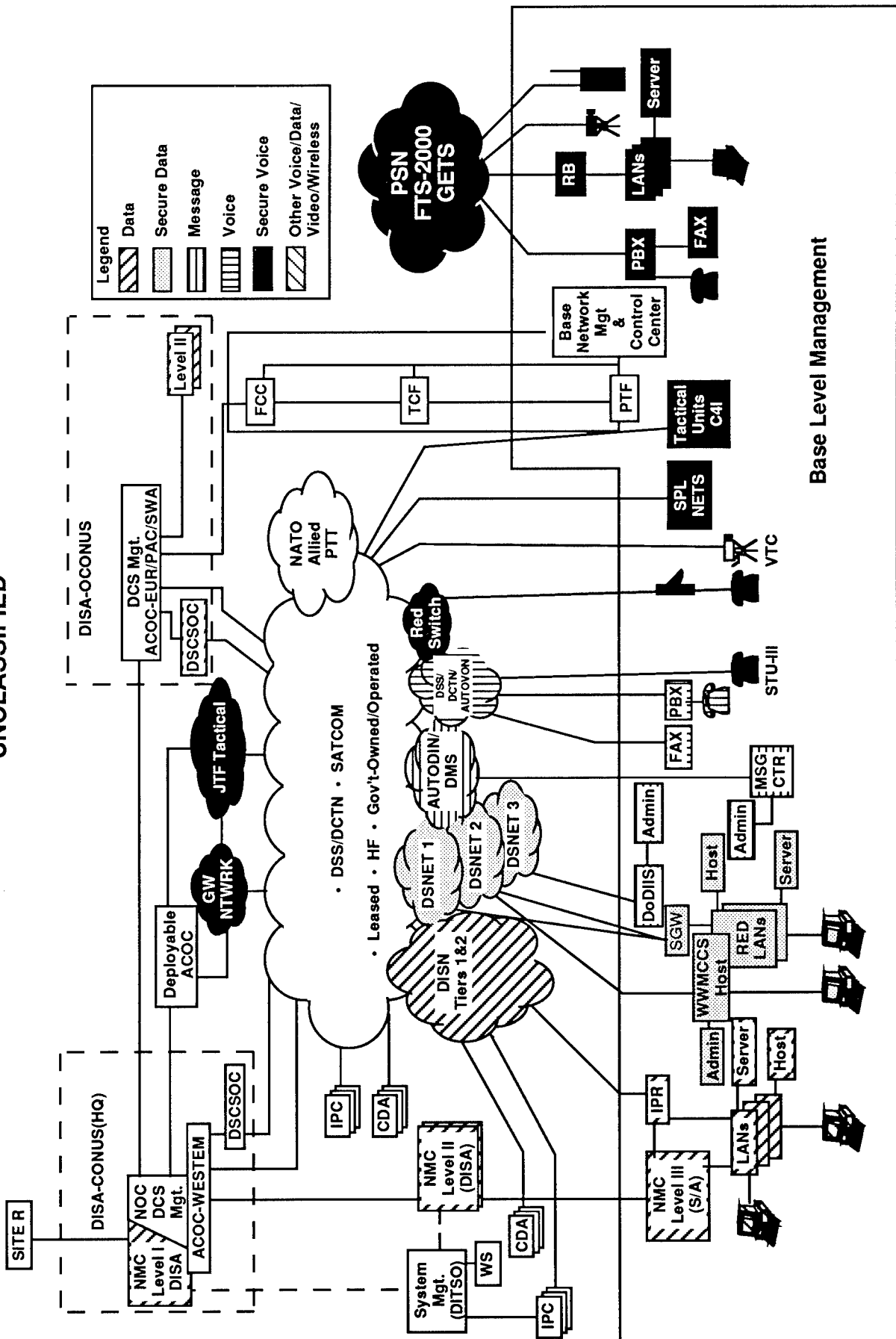
- The Transport infrastructure performing information switching and transmission
- Network Management
- Value added services

External factors that will influence DISN and play a role in its evolution include:

- User communities ranging from the NCA to the military support structure and warfighting forces
- The respective missions and functions of these user communities
- Levels of conflict, which range from peacetime to post-attack
- Revisions in policy, procedures, and budgetary allocations
- Advances in technology and international standards
- Developments in NATO and Allied systems with which DISN must interoperate
- Developments in commercial, civil, and special systems such as the Government Emergency Telecommunications Service (GETS).

# 1995 DISN Baseline

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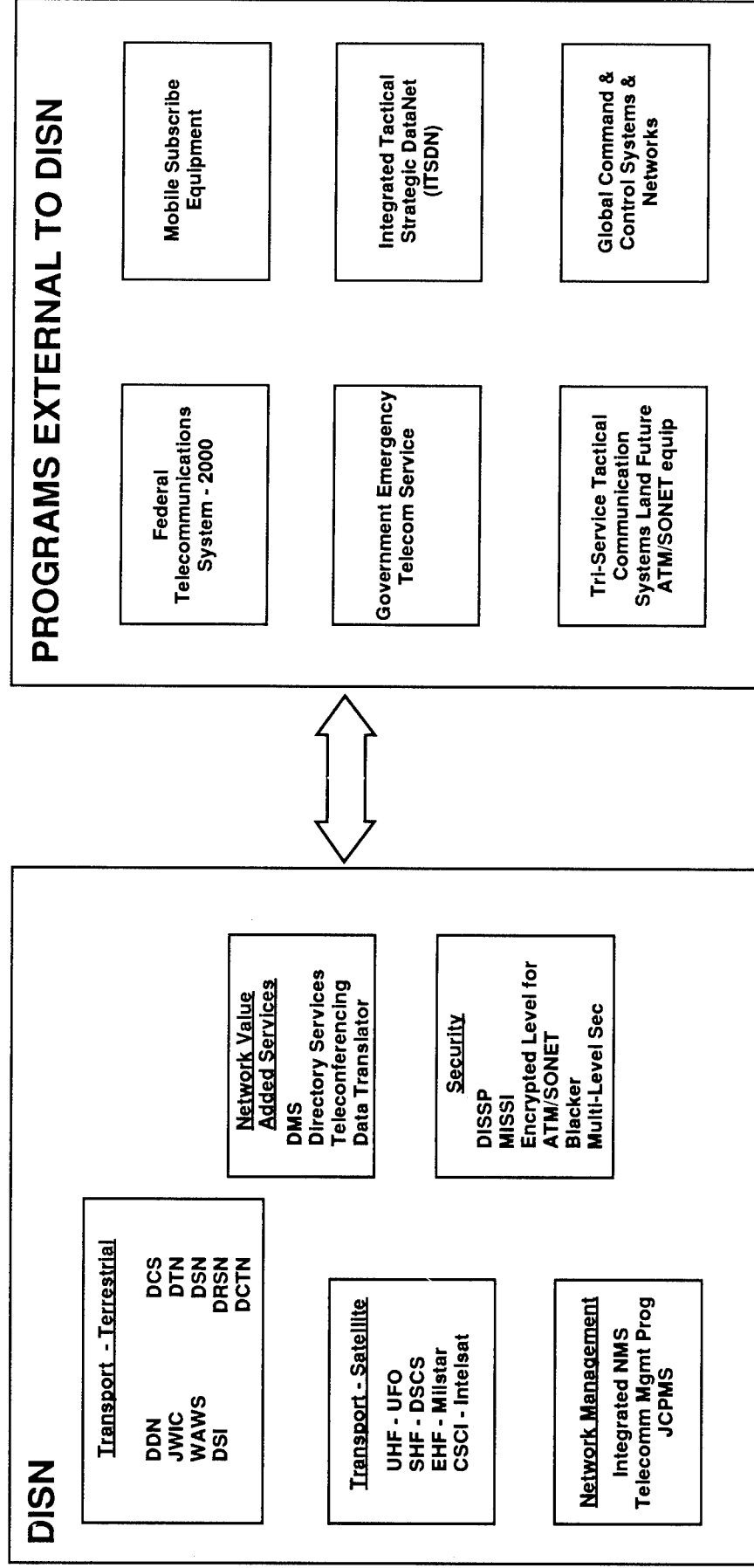
### **1995 DISN Baseline**

Figure I-5-3, 1995 DISN Baseline, shows the key structure of the current DISN baseline. The legend defines seven categories of the structure such as data and message transfer. At the lower level of the figure are found the key components of the Base Level. On the upper level is found the systems associated with the transport of the information to include all types of media, services and networking.

One portion of the baseline addresses the non-DISN support from the commercial sector (Public Switched Network, FTS-2000 and the Government Emergency Network System).

# Overview of DISN Systems and their Relationship to Other Programs

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I-5-8

Figure I-5-8 Overview of DISN Systems

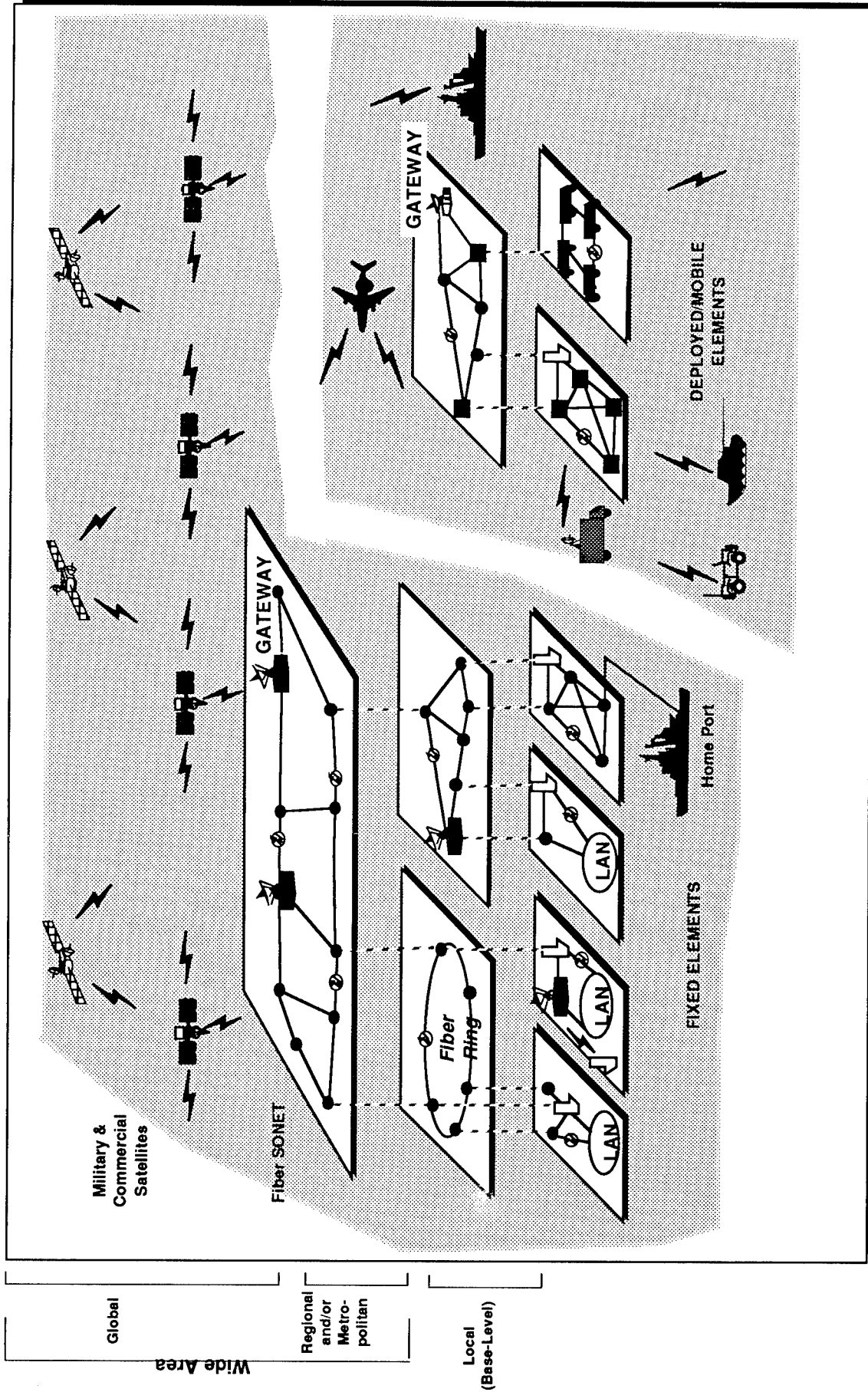
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### **Over View of DISN Systems**

Figure I-5-4, Over view of DISN Systems and Their Relationships to Other Programs, displays several of the network components associated with the function they provide. The DISN must have the capability to interoperate with other telecommunications systems both national and international. It must also have the capability to effect a virtually seamless interface between strategic long-haul circuits and theater/tactical circuits. The ability to provide appropriate levels of security for information traversing across DISN/non-DISN gateways remains a technical challenge.

# DISN Goal Transport Levels

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I-5-10

Figure I-5-5, DISN Goal Transport Levels  
JS-94.002

### **DISN Goal Transport Levels**

Figure I-5-5, DISN Goal Transport Levels, depicts the fixed, wide area elements of the DISN Transport segment which are comprised of the global and regional (or metropolitan) networks, which provide trunking connectivity between geographically dispersed cluster of local area networks and between some high volume users. These elements also include tandem switching, transmission media, access, security, and management capabilities.

The fixed, local area DISN transport layer is made up of individual networks established on a base or other military facility. The local area communications elements provide local networking functions among defined sets of users and allow consolidated access to wide area services. These elements include radio nets, satellite terminals, LANs, private branch exchanges, local transmission facilities (e.g., twisted pair, coaxial, or fiber-optic cable), and necessary security and management capabilities. Ground, shipborne and airborne forces are provided communications support through the deployed/mobile elements of the DISN transport segment. Long-haul connectivity between remote deployed forces and the fixed elements will primarily be accomplished through satellite communications.

The Network Management segment of DISN provides a comprehensive suite of network management and control functions, a distributed hierarchical network management structure and standardized network management protocols. The DISN network management concept underpins a capability to interrogate any number of element managers that employ combinations of proprietary or standards-based protocols, and consolidate, process and convert network data in real time into useable network information.

Currently Value-added Services are defined to be standardized DOD Directory Services which will include messaging information, locator services, information source locations, medical and personnel information. New functions capabilities that will include additional data processing and business applications are planned for the future.

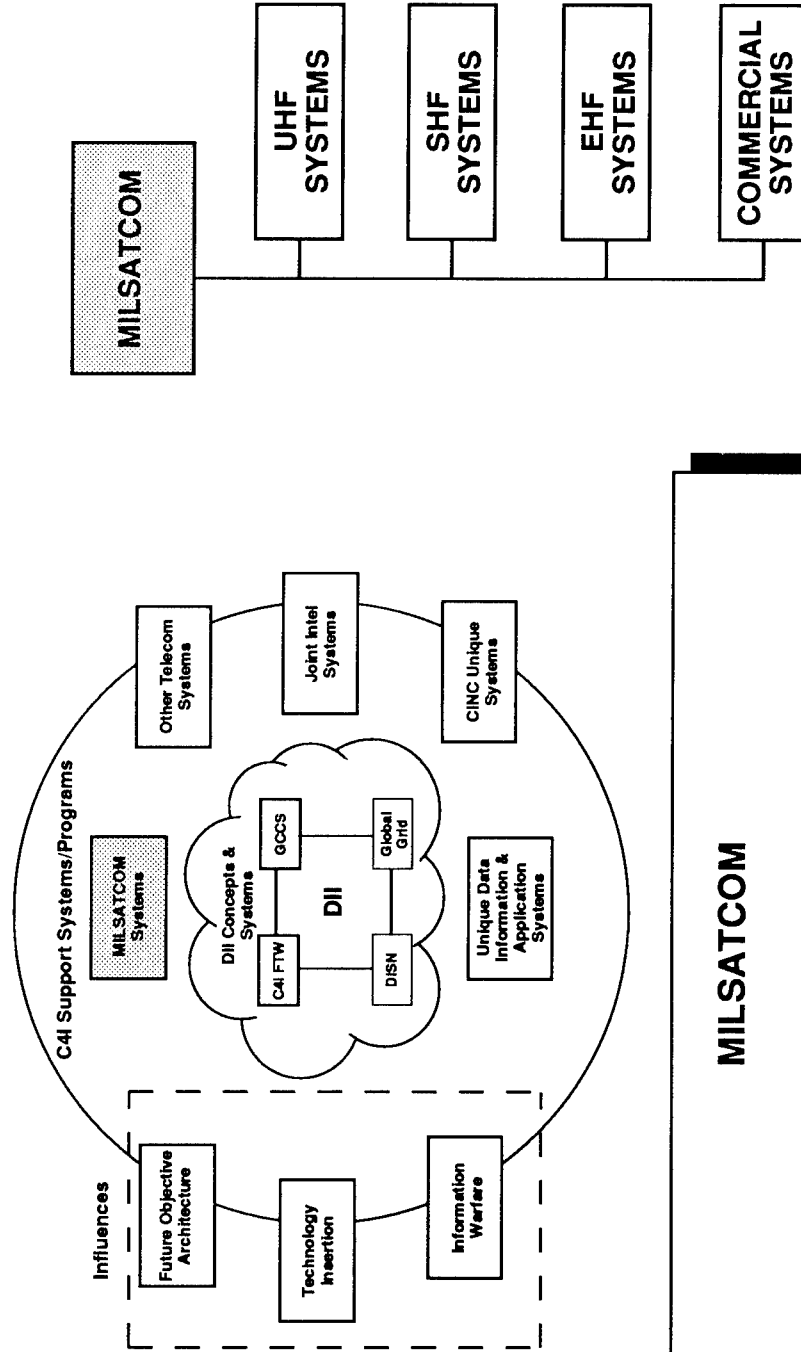
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# **Section I - Chapter 6**

## **MILSATCOM Systems**

# MILSATCOM Systems

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## MILSATCOM

- Provides basic long-haul communications support to the warrior
- Extends DISN services to the warriors, including mobile users
- Consists of UHF, SHF, EHF and Commercial SATCOM systems
- Evolving toward greater reliance on commercial resources

# MILSATCOM

The MILSATCOM program primarily provides basic long-haul communication support to the Warrior deployed. Figure I-6-1 MILSATCOM Systems, depicts the four key components of which it is comprised: UHF Systems; SHF Systems; EHF Systems and commercial satellite communications. MILSATCOM supports three key operational areas: strategic operations; theater tactical operations; and general purpose support to military operations. The primary emphasis of MILSATCOM is to provide low-data-rate (LDR), medium-data-rate (MDR) and high-data rate (HDR) communications for US strategic and tactical forces employed in one or more regional conflicts. UHF systems essentially provide unprotected LDR connectivity to deployed forces. SHF systems essentially provide LDR and MDR connectivity to deployed forces with a moderate degree of protection against electronic warfare. EHF systems provide a survivable, jam-resistant, worldwide communications system to meet essential communications needs of the NCA, combatant commanders, and operational forces at all levels of conflict.

Direct Broadcast Satellite (DBS) systems will use small, low-cost commercial type terminals to provide high-capacity one-way data transfer of information such as imagery, tomahawk, MDUs, ATOs, mapping, and logistics data directly to warfighters and other users at all levels.

Commercial satellites will be used increasingly to carry non-sensitive administration or combat support traffic. These systems will be mostly at C and Ku bands, presently in use internationally.

# MILSATCOM Requirements Survivability Hierarchy

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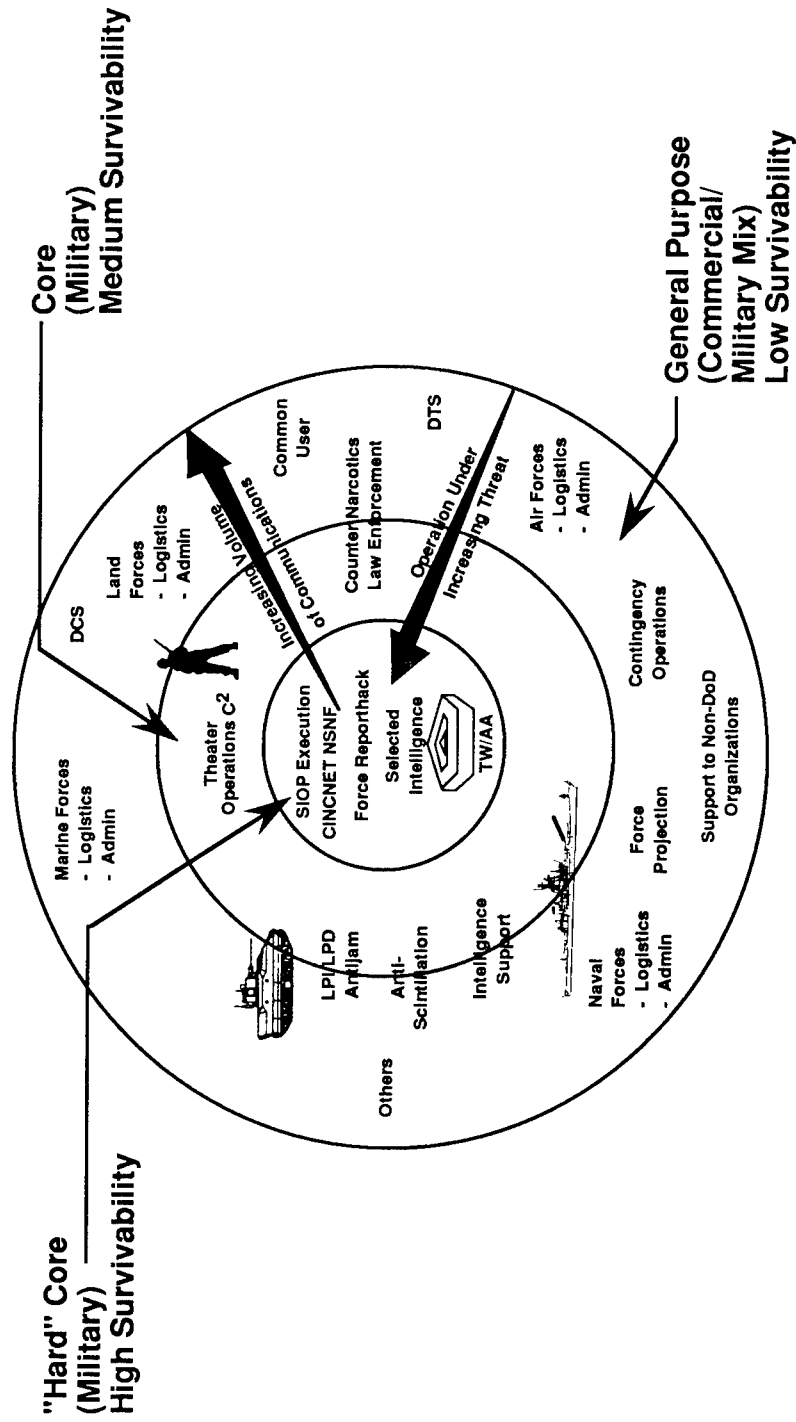


Figure I-6-2, MILSATCOM Requirements Survivability Hierarchy  
JS-94.002

### **MILSATCOM Requirements Survivability Hierarchy**

Figure I-6-2, MILSATCOM Requirements Survivability Hierarchy, depicts concentric rings of increasing levels of survivability with nuclear warfare C4I support at the center. For the purpose of assessing survivability, requirements are often categorized as: "hard core", "core" and general-purpose". The "hard core" systems are the most highly survivable and resistant to electronic warfare (EW) attack. "Core" systems are basically operational C2 and intelligence, and are moderately survivable to EW attack. General-purpose systems are usually more administrative and support in nature and are not designed to be significantly survivable to EW attack.

MILSATCOM plays several key roles in support of the Warfighter. Typical examples include: Communications to deployed forces; extension to isolated areas; response to connectivity surge requirements; intra- inter-theater and reachback capabilities; communications on the move; and restoral and backup to terrestrial systems.

MILSATCOM has several key features for support of JTF operations. These key features include: worldwide coverage and connectivity; effective terrestrial/SATCOM integration; capacity for peacetime and force projection surges; threat mitigation; operational flexibility and responsiveness; joint and combined interoperability; real time network control and recognition; and cost and technology effective systems.

# Global Reach Supported by SATCOM

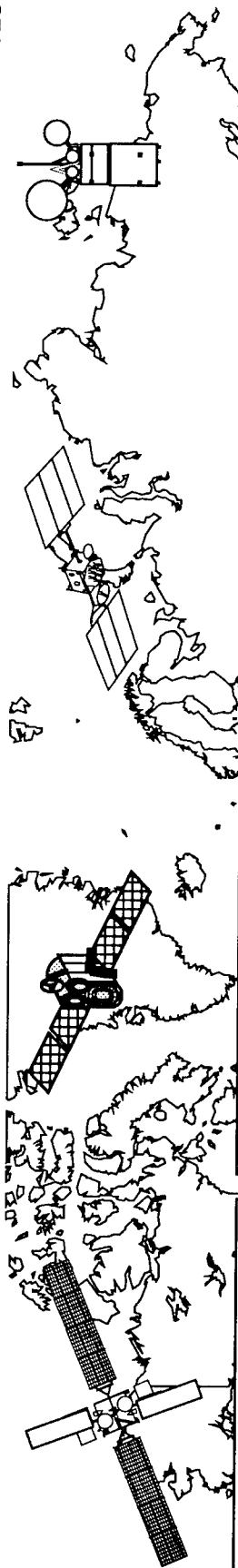
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**MILSTAR (EHF)**  
4 SATELLITE  
CONSTELLATION

**DSCS (SHF)**  
5 SATELLITE  
CONSTELLATION

**UFO (UHF)**  
8 SATELLITE  
CONSTELLATION

**COMMERCIAL (L, C, Ku)**  
MIX OF DOMESTIC &  
INTERNATIONAL SATELLITES



## Milstar

- **Key Users/Missions**
  - Strategic C2, Theater/Tactical, Spec. Ops, Intel
- **Coverage and Connectivity**
  - Worldwide with Crosslinks
  - Global, Spot, Agile Beams
- **Capacity and Service**
  - Low to Medium Data Rates
  - Voice, Data, Conferencing
- **Survivability**
  - Highly Protected Services (AJ, AS, LPI/LPD): LDR and MDR
- **Service Outage**
  - ~ Seconds or Less
- **Flexibility**
  - Dynamic Net Reconfiguration
  - Interoperable Networks
- **Control**
  - Full U.S. DoD
- **Terminals**
  - Fixed, Mobile, Transportable, Manpack, Sub

## DSCS

- **Key Users/Missions**
  - Theater/Tactical, Intel, DCS/NCS, Space Support, Non DoD
- **Coverage and Connectivity**
  - Worldwide
  - Global, Spot Beams, MBA
- **Capacity and Service**
  - Low to High Data Rates
  - Voice, Data, Imagery
- **Survivability**
  - Protected Services: Low to Medium Data Rates
- **Service Outage**
  - ~ Minutes
- **Flexibility**
  - Fixed Networks: Point-to-Point Mesh, Hub-Remote
- **Control**
  - Full U.S. DoD
- **Terminals**
  - Fixed, Mobile, Transportable

## UFO

- **Key Users/Missions**
  - Theater/Tactical, Spec Ops, Intel, Non DoD
- **Coverage and Connectivity**
  - Worldwide
  - Global Beam
- **Capacity and Service**
  - Low to Medium Data Rates
  - Voice, Data
- **Survivability**
  - Unprotected Service
- **Service Outage**
  - ~ Hours
- **Flexibility**
  - Fixed Networks: Point-to-Point Mesh, Push to Talk
- **Control**
  - Full U.S. DoD
- **Terminals**
  - Fixed, Mobile, Manpack, Transportable, Sub

## Commercial

- **Key Users/Missions**
  - Theater/Tactical, Intel, DCS/NCS, Space Support, Non DoD
- **Coverage and Connectivity**
  - Global and Regional Beams: C-, L-band
  - Area/Spot Beams: Ku-band
- **Capacity and Service**
  - Low to High Data Rates
  - Voice, Data, Imagery
- **Survivability**
  - Unprotected Service
- **Service Outage**
  - ~ Hours
- **Flexibility**
  - Fixed and Dynamic Networks: Point-to-Point, Mesh, Hub-Remote
- **Control**
  - CONUS: U.S.
  - OCONUS: U.S., International Consortia
- **Terminals**
  - Fixed, Mobile, Transportable

I-6-6

Figure I-6-3, Global Reach Supported by SATCOM

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### **Global Reach Supported by SATCOM**

Figure I-6-3, Global Reach Supported by SATCOM, depicts the four categories of satellite system and the features associated with each category. Collectively the figure depicts the overall capability of MILSATCOM systems to support the warrior.

SATCOM support can also extend DISN services to the warfighters. The extension of DISN to the mobile user requires a satellite gateway to interconnect the user with the DISN network. The transmit and receive SATCOM terminals will provide the interface between the terrestrial DISN network and the SATCOM links to the disadvantaged (mobile/transportable) terminals. One basic function of the fixed large SATCOM terminal will be to convert terrestrial SONET protocols into suitable formats and data rates compatible with the warfighter's equipment and supportable within his available SATCOM resources. Standards need to be developed for these SATCOM extensions of DISN to tactical and mobile users so that a compatible gateway design can be developed and implemented.

Several programs directly relate to the MILSATCOM support of the Warrior. In general, as MILSATCOM systems evolve greater reliance will be made on commercial assets. The Warrior will have access to hand-held personal communications systems which will use Low Earth Orbit (LEO) satellite systems for connectivity.

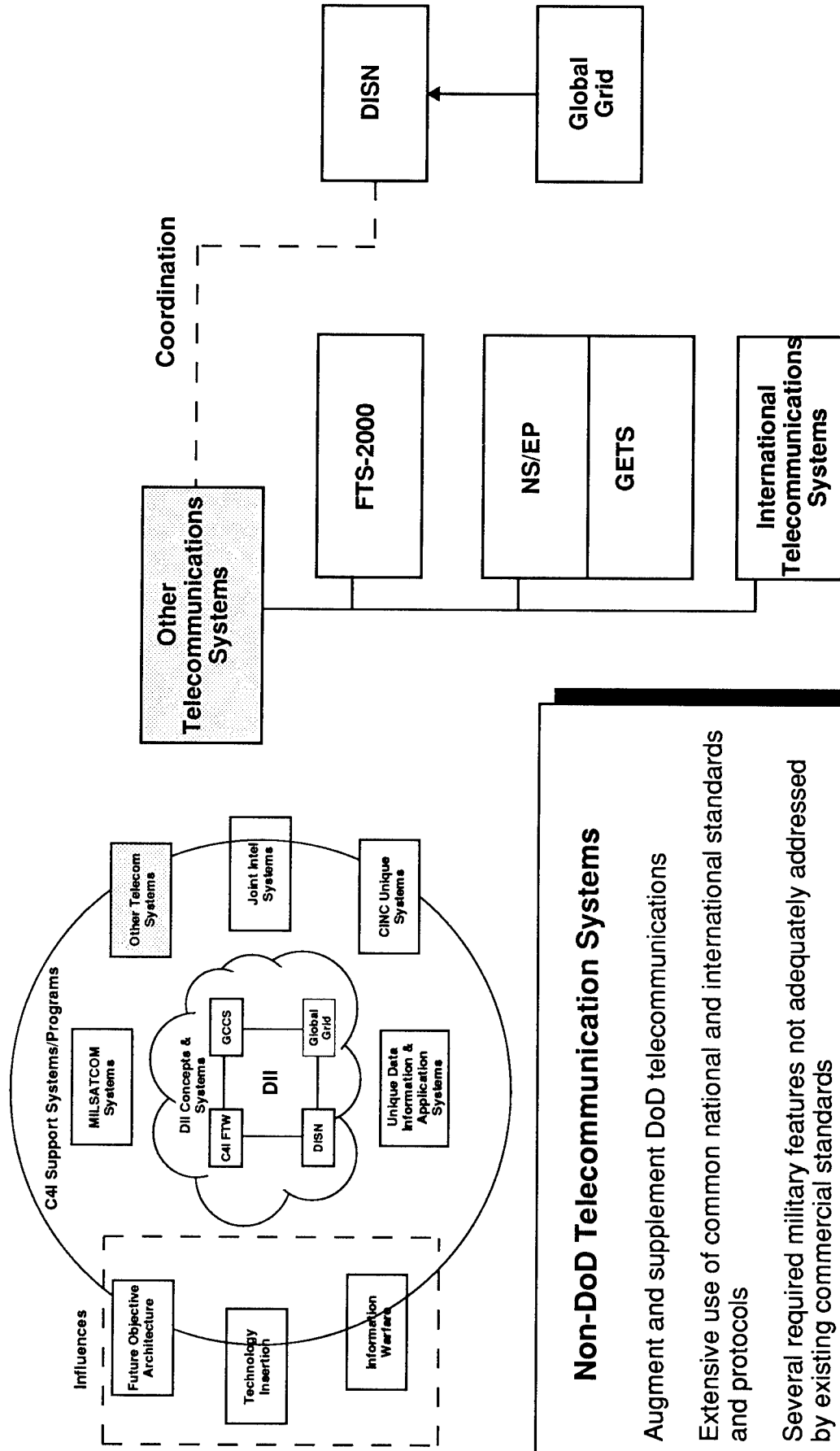
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# **Section I - Chapter 7**

## **Other Telecommunications Systems**

# Other Telecommunications Systems

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### Non-DoD Telecommunication Systems

- Augment and supplement DoD telecommunications
- Extensive use of common national and international standards and protocols
- Several required military features not adequately addressed by existing commercial standards
- Enhancements to commercial standards and protocols for military necessity in process

Figure I-7-1, Other Telecommunications Systems (Non-DoD)

I-7-2

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## Other Telecommunications

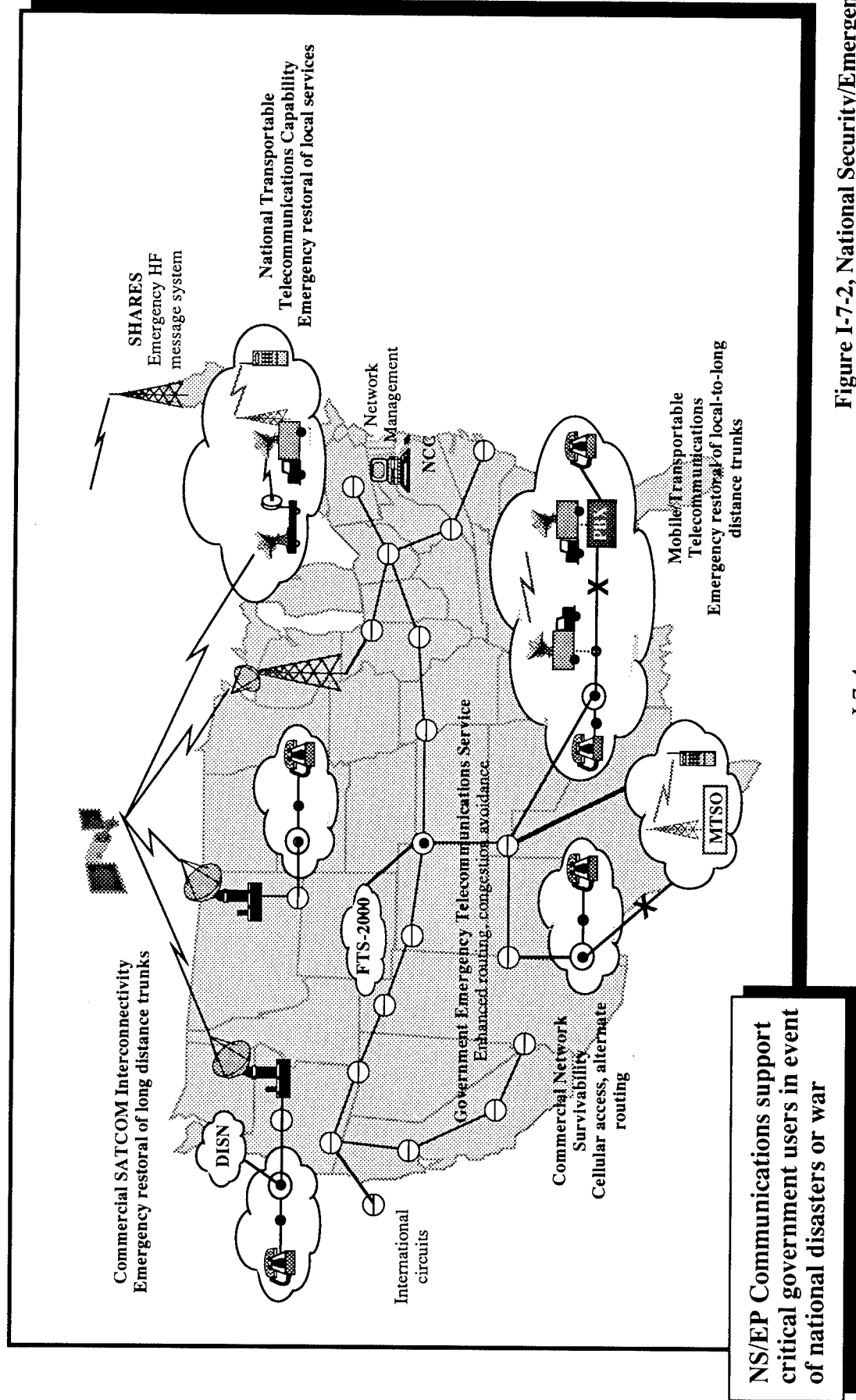
There are other non-DOD telecommunications systems which directly impact the development of the Defense Information Infrastructure. Figure I-7-1, Other Telecommunications Systems (Non-DOD), depicts systems which are directly related to the DII as part of the National Information Infrastructure (NII). In the interests of economics, greater use must be made of commercial telecommunications resources to augment or supplement military C4I resources. However, since commercial resources are not designed to meet the more stringent capabilities required of military systems, additional capabilities must be designed into multipurpose systems to supplement their capabilities with military features, making them more adaptable to support military C4I.

Military Enhancements to commercial data communications protocols and standards are currently under development. For instance, eight military features have been identified in the data communications protocol area that are not adequately addressed by existing commercial data communications standards. Adaptation of these features for portions of the national assets is required so that critical network management and control of military type telecommunications can be exercise in real time by trained personnel. Such features include:

- **Multi-homed and mobile host systems.** Multi-homing is a mechanism for attaching an end system to two or more network access points so that a system setting up a call to the end system is not aware of the extra connectivity.
- **Multi-endpoint connections (multi-addressing).** To transmit data to a number of recipients a user must establish a connection for each recipient and send a separate copy of the data across each connection. The network should be able to take care of the routing, controlling and distributing the data.
- **Networking.** Mechanisms are required to facilitate the interconnection of various systems at the boundary point between sub-networks.
- **Network and system management.** Management functions are required that may be more sophisticated than those considered satisfactory for civilian network management of broken networks in which layers of protocols are inoperable.
- **Security.** Protection measures are required to prevent unauthorized access to the system and to ensure the confidentiality of the information it carries.
- **Quality of service.** The range of quality of service parameters required for military systems exceeds those currently permitted within civilian networks. One aim is to maximize network survivability.

# National Security/Emergency Preparedness (NS/EP) Communications

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I-7-4

Figure I-7-2, National Security/Emergency Preparedness (NS/EP) Communications  
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- **Precedence and preemption.** To minimize congestion, particularly in a damaged network where resources are at a premium, it is desirable to be able to allocate resources on the basis of priority levels assigned to the messages being routed through the congested area.
- **Real-time and tactical communications.** Certain applications require communications with specified time outs, which can be in the range of milliseconds to seconds. Accurate sequencing is essential.

#### **National Security/Emergency Preparedness (NS/EP) Communications**

Figure I-7-2, National Security/Emergency Preparedness (NS/EP) Communications, depicts geographically a notional view of the NS/EP subsystems. The NS/EP requirements include: voice band service; Interoperability; survivability/endurability; international interface; nationwide coverage; and intra/interagency emergency operations. In support of the NS/EP, the Government Emergency Telecommunications System (GETS) is used to provide authorized government users with a nationwide NS/EP switched voice and low-speed data communications service by utilizing the surviving Public Switched Network resources under a full range of conditions: crisis; natural disasters, and nuclear war. The GETS will support personnel responsible for: national security leadership; national security posture and US population attack warning; public health, safety and maintenance of law and order; and public welfare and maintenance of national economic posture; GETS uses three major types of networks: major long-distance networks provided by interchange carriers; local networks provided by local exchange carriers; and government-leased networks, including the FTS-2000 and the DISN.

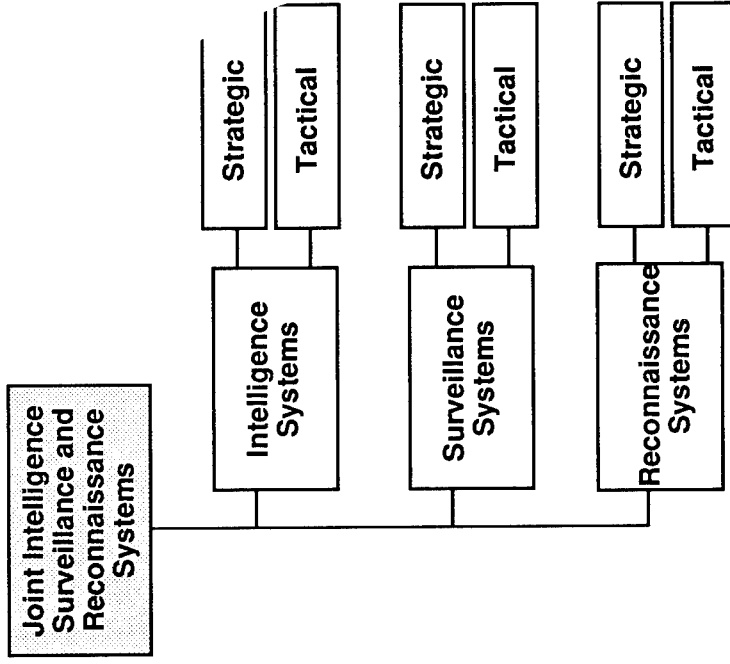
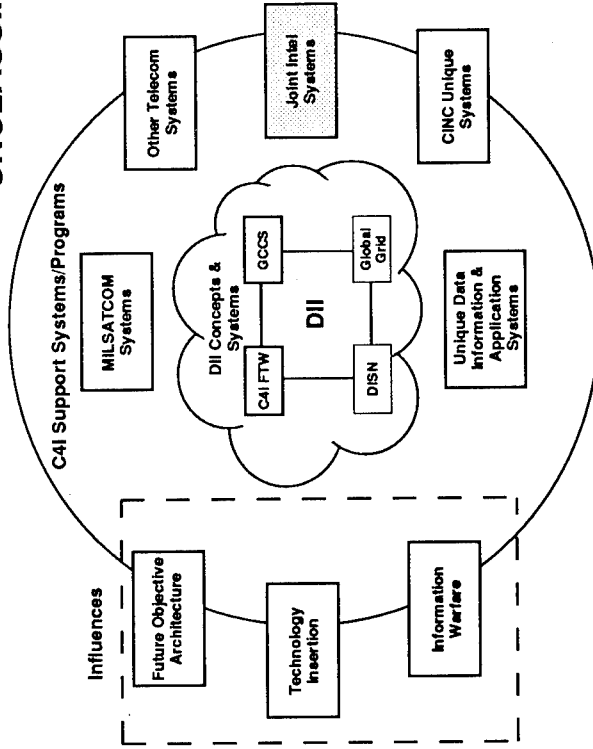
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## **Section I - Chapter 8**

# **Joint Intelligence, Surveillance and Reconnaissance**

# Joint Intelligence, Surveillance and Reconnaissance Category

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## Joint Intelligence, Surveillance and Reconnaissance Category

- Includes Intelligence, Surveillance and Reconnaissance (ISR) for strategic and tactical warriors
- Strategic ISR efforts expanding from the "prevention" role to increased emphasis on the "protection" role
- Many formerly strategic-only systems being tailored for greater theater/tactical use.
- Increased emphasis placed on improved interoperability and synergistic support among IS&R systems
- Increased rapid access of warriors to processed ISR products

I-8-2

Figure I-8-1, Joint Intelligence, Surveillance and Reconnaissance

JS-94.001

# Joint Intelligence, Surveillance and Reconnaissance

This category includes Joint Intelligence, Surveillance and Reconnaissance (ISR) as one functional area. Figure I-8-1, Joint Intelligence, categorizes these functions into primarily strategic or primarily tactical missions. The ISR mission itself is to efficiently and effectively support military operations with information which is complete, current, and accurate to reduce to a minimum the degree of uncertainty which surrounds a decision. ISR systems need to be precise, current, and have operational utility. They should blend various disciplines into an all-source information system capable of providing tailored support to meet the needs of the warfighter and his weapon systems. To the degree feasible information should be "pulled" or accessed as needed by the Warrior rather than automatically disseminated broadly to many Warriors without any tailoring to specific needs.

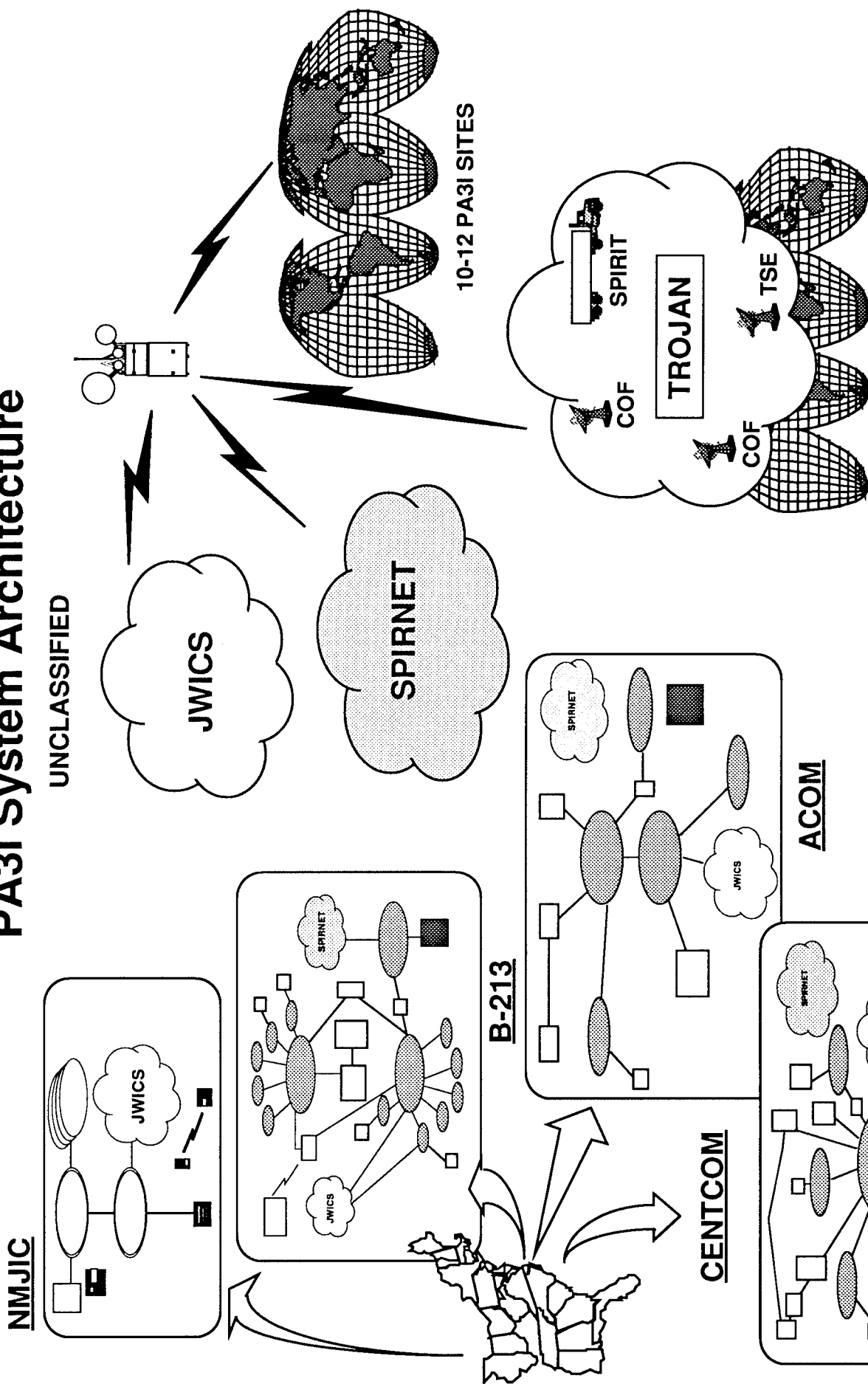
Strategic intelligence efforts to combat Weapons of Mass Destruction (WMD) proliferation have (in the past) focused primarily on prevention (e.g. monitoring exports, treaty compliance, and indigenous production capabilities). New DOD counterproliferation initiatives will expand strategic intelligence efforts toward the protection role, ensuring that sufficient and appropriate information is available to commanders in the field, strategist and policy makers around the world to make timely decisions.

In the tactical area, new sensors have been developed for a wide variety of platforms which are needed to provide a broad range of ISR data to include: enemy order of battle and intent, adverse weather surveillance of the battlefield, troop deployment and status, logistics readiness, etc. Operational information is needed at significantly increased depths of coverage and over wider areas of coverage. In some cases continuous coverage may be essential to enable targeting with technically advanced munitions, such as precision guided munitions. It is also essential to have the ability to distinguish quickly and accurately friendly, foe and neutral contracts.

Surveillance encompasses a range of systems measuring over lengthy periods of time, different phenomena which may include: imagery, RF signal intelligence, sound signal processing, indications and warning, human intelligence, etc. Surveillance can be both strategic and tactical. Ballistic missile defense surveillance systems are examples of strategic systems, while electronic intelligence (ELINT) surveillance sites are examples of tactical surveillance. Components of the Wide Area Surveillance Tracking and Targeting System (WAST2) and Theater Exploitation of National Capabilities (TENCAP) systems can support both strategic and tactical surveillance roles and contribute to reducing uncertainty and risk associated with operational decisions.

# PA3I System Architecture

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Strategic reconnaissance and tactical reconnaissance can be especially valuable against highly perishable targets. Such systems are normally directed to a specific mission targeted to acquire additional specific information for planning and targeting. Systems, such as Rivet Joint, Compass Call, TR-1, and Guardrail, contribute to an assessment of the enemy order of battle and the targeting functions.

#### **Pilot Accelerated Architecture Acquisition Initiative System (PA3I), (JWICS, DISN/SIPRNET, AND TROJAN)**

The Pilot Accelerated Architecture Acquisition Initiative (PA3I) System is designed to support improved connectivity and access to imagery-based intelligence products by both producers and end users. The A3I architecture is being implemented as a pilot program at four intelligence centers: USCENTCOM; DIA; USACOM; and NMJIC. Connectivity to the organizations supported by the four intelligence centers is provided through the Joint Worldwide Intelligence Communications System (JWICS) network, the Defense Information System Network/Secret Internet Protocol Router Network (DISN/SIPRNET), and the TROJAN Data Network. The four sites were chosen for the pilot to demonstrate needed improvements in product quality and distribution that were identified in recent crisis situations.

The PA3I project is a major step toward an open, distributed United States Imagery Systems (USIS) architecture that should greatly enhance the ability to locate and exchange data. The PA3I System Architecture is shown in Figure I-8-2. Each of the sites, with the exception of the NMJIC, has both Sensitive Compartmented Information (SCI) and Collateral Local Area Networks (LANs). The SCI LAN supports the existing systems which operate in a system-high mode and provides image data to PA3I users. The JWICS interconnects the sites' SCI LANs and also provides connectivity to TROJAN for access to SCI products. A guard capability permits the transfer of collateral and downgraded products from the SCI LAN to the Collateral LAN for access by the war fighter via the SIPRNET and TROJAN networks.

The Image Product Archive (IPA), a newly developed system element for PA3I, is installed on all LANs, both SCI and Collateral. The IPA provides a distributed, standardized library function for imagery and imagery product storage and retrieval by consumers at the national, theater, force and unit levels throughout the world. Its design is based on commercially available hardware and software that conforms to industry and government standards. IPAs allow visibility into and sharing of image products between different exploitation, production and dissemination centers and DOD and National levels; expansion for the collection/production resources for satisfying requirements, and reduction in collection tasking efforts for data that already exists. The pilot implementation places IPAs at USCENTCOM, USACOM and NMJIC, providing remote support to lower echelon commands.

Joint Deployable Intelligence Support System (JDISS) workstations provide the primary access for local and remote users to locate and retrieve the image products required for their missions.

### **Communications Architecture Overview**

The primary purpose of the PA3I wide areas communications architecture is to provide wide area connectivity between four intelligence centers, approximately 12 Joint Chief of Staffs (JCS)-designated pilot sites, and TROJAN Data Network user sites (of which there are currently 58). The JWICS network provides connectivity for SCI data traffic while the DISN/SIPRNET operates at the SECRET Collateral level. Both of these networks interface with the TROJAN data Network through the TROJAN switching center. This interface provides connectivity at both SCI and Collateral security levels to TROJAN fixed and tactical users. Through the appropriate LAN hardware and software, the IPAs at each location achieve connectivity to the networks and therefore to all valid network users through packet-switched router connections.

### **The JWICS Network**

The JWICS network is cleared to TOP SECRET SCI and is viewed as the global wide area intelligence communications network supporting the DOD Intelligence Information System (DODIIS) Corporate Network concept. The original JWICS network was a hub and spoke topology that was soon recognized as being less than optimal for an integrated worldwide data and video architecture. The current system is a mesh topology using router and smart multiplexer technology and to add a significant number of JWICS sites worldwide. At the end of FY 95 there will be 100 JWICS sites operational to support both video and data communications.

JWICS nodes are classified into two categories: video sites and data-only sites. Typically for video sites, the inter-site data rate between nodes is the telecommunications standard T-1 rate, 1.544 Mbps. For data-only sites, the data rate is 64 Kbps. The maximum data rate available for data message and image product transfer is 384 Kbps.

### **The DISN/SIPRNET**

The original collateral packet switched data service for the PA3I architecture was targeted as being the DSNET-1, which uses switching technology that is limited to a maximum rate of 56 Kbps and is targeted for decommissioning before FY96. The SIPRNET replaces the DSNET-1 and is the first step in migrating to DISN. The upgrade is the SECRET Collateral data network for PA3I users.

The DISN/SIPRNET affords higher and selectable data rates at a much lower operations and maintenance recurring cost than DSNET-1. All four intelligence centers and PA3I JCS-designated sites are DISN/SIPRNET sites. The inter-site data rates are 512 Kbps and in some cases T-1. Users can connect to the network at selectable data rates that meet their individual data needs and operating budgets.

### **TROJAN Data Network**

The TROJAN Data Network was originally designed to support intelligence operations readiness and training. This mission has been greatly expanded to include a seamless strategic-to-tactical communications system that provides army intelligence support to combat commanders. The TROJAN Data Network architecture consists of the following elements: 27 fixed-based TROJAN Classic Central Operating Facilities; 17 TROJAN Switching Extensions (TSEs); and 13 TROJAN SPIRIT systems which interconnect through the TROJAN Switching Center (TSC). The TSC provides connectivity between the TROJAN Data Network systems via satellite connectivity. Both the TSEs and the SPIRIT systems are deployable and provide support to the combat commanders in the field. The TROJAN Data Network uses a multi-level secure (MLS) multiplexer that permits the transmission and receipt of both SCI and collateral traffic. By virtue of the JWICS and DISN/SIPRNET interfaces at the TSC, the TROJAN system extends the PA3I user community to nearly any place in the world provided that satellite connectivity at the proper bandwidth and power are available. Currently, the system operates at a maximum data rate of 512 Kbps which is limited by the current selected crypto equipment. A data rate of slightly higher than 2 Mbps is possible, provided that proper satellite connectivity is achieved and higher rate crypto equipment is installed.

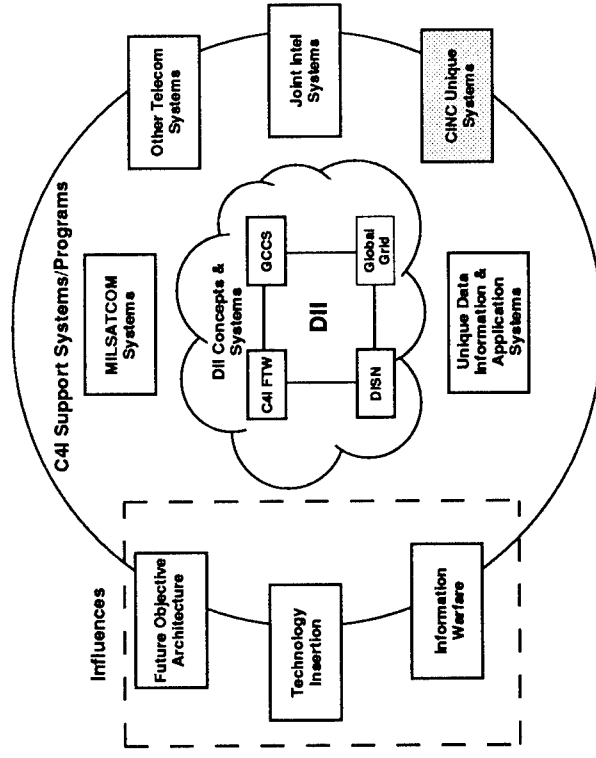
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# **Section I - Chapter 9**

## **CINC Unique Systems**

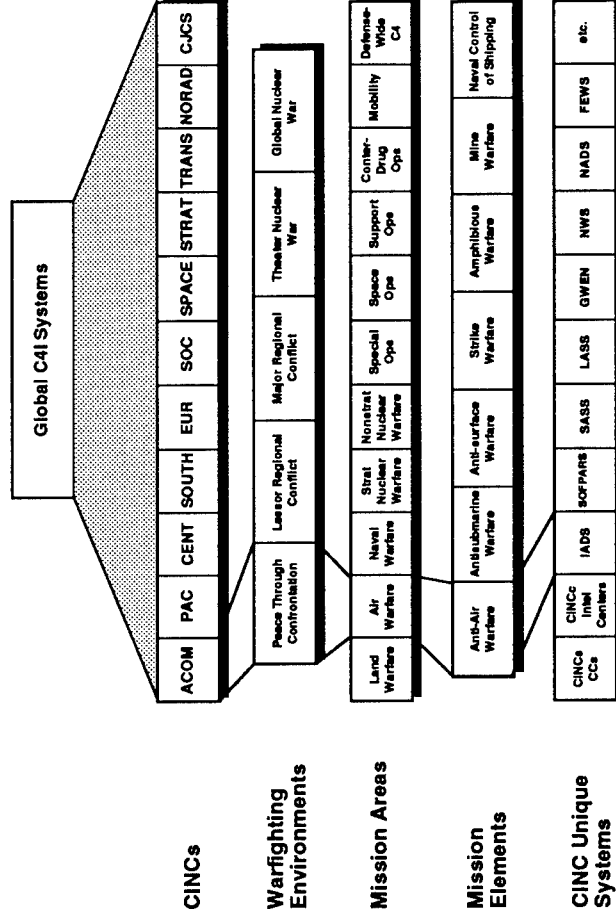
# CINC Unique Systems (Exemplar)

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## CINC Unique

- Fills needs not addressed by standard Joint Systems
- Tend to be "Stove-Piped" specific mission systems
- Requirements for interoperability and standardization relaxed
- Often supported by proprietary hardware/software
- Software programs normally excluded from DII overview



I-9-2

Figure I-9-1, CINC and CJCS Unique Systems  
JS-94.001

## CINC and CJCS Unique Systems

Figure I-9-1, CINC and CJCS Unique Systems, depicts typical CINC systems which are indirectly supported by the DII concept. Most of the CINC's have C4I systems which are unique to that CINC and his assigned missions. Unique systems can be more easily tailored and refined to maintain performance at an optimal level consistent with the threat without the need for detailed multi-command coordination. For this reason the need for interoperability and standardization is relaxed. However, the functions performed by the systems tend to have many similarities in configuration and operation. Coordination among systems is highly desirable.

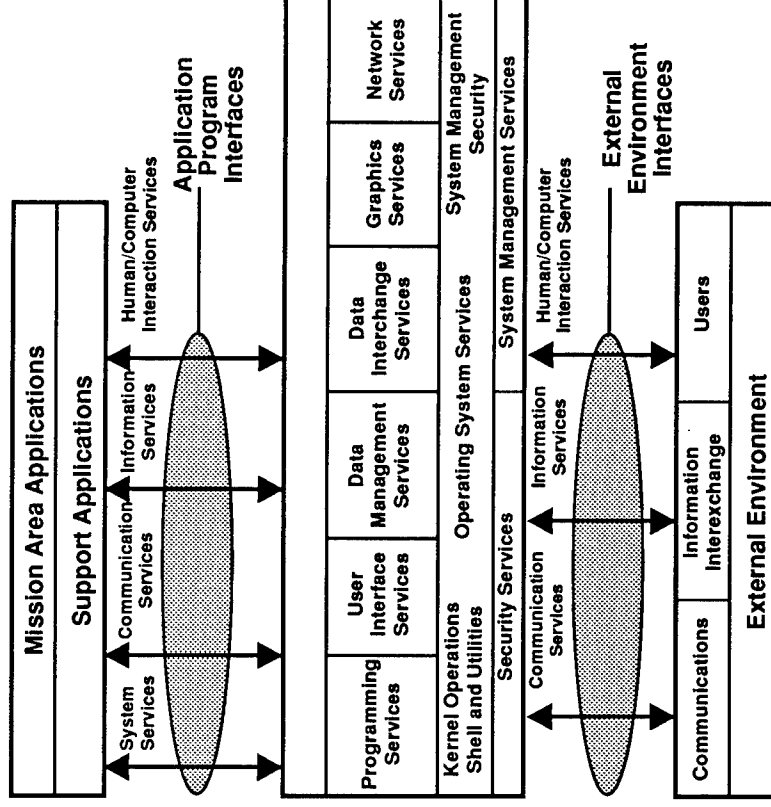
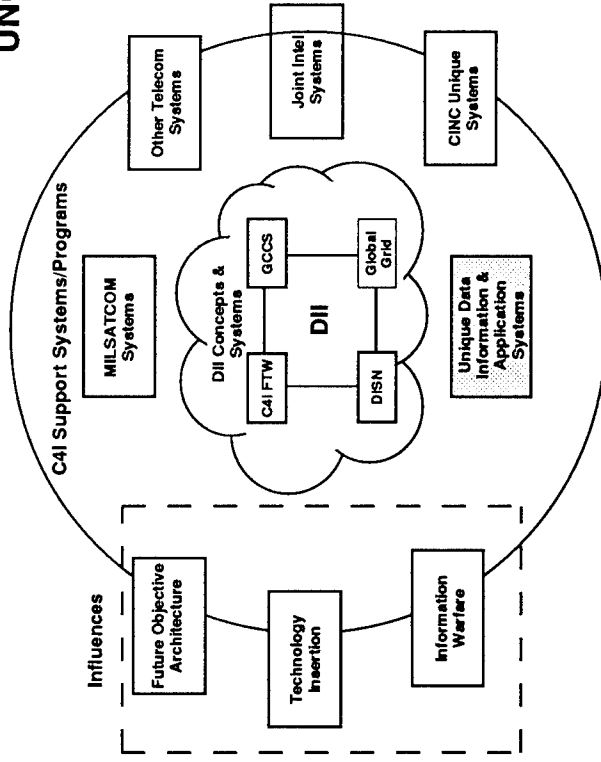
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## **Section I - Chapter 10**

# **Unique Data, Information and Application Programs**

# Structure for Unique Data, Information and Application Programs

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## Unique Data, Information and Application Programs

- Many programs designed for a specific role with unique needs
- Unique programs do not come under the umbrella of DII systems with strong emphasis on interoperability
- TAFIM promulgated by OSD establishes a Technical Reference Model to allow individual multi-purpose and unique Information Systems components to be considered within the overall context of C4I
- Model hierarchy has five levels: Enterprise; Mission; Function; Application; and Personal

Figure I-10-1, Structure for Unique, Information and Application Programs

I-10-2

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# Unique Data, Information and Application Programs

Figure I-10-1, Structure for Unique Data, Information and Application Programs, depicts a structure for Non-DII Information Management. This structure is referred to as the DOD Technical Reference Model for a Defense Information Systems (DIS) target Architecture. The DIS target architecture provides a consistent structure for distributed information management across the entire DOD. The objectives of the DIS architecture are cost reduction, greater efficiency, greater mission effectiveness, interoperability, and consistent security.

An information system consists of three elements: data; mission-specific applications; and a technical infrastructure consisting of support applications, computing platforms, and communications networks. Each of these information system elements has a unique life-cycle which requires distinct development and maintenance approaches. Thus, an information systems architecture must include a data architecture, an application software architecture (mission-specific), and a technical (i.e., support applications, computing platform and communications networks) architecture.

The Technical Architecture Framework for Information Management (TAFIM) has been promulgated by the OSD and mandates the use of open systems, software reuse, data management, communication, and security standards to achieve significant cost reduction, interoperability, and security for all defense mission areas. The TAFIM Integration Model (TAFIM IM) organizes the DOD hierarchy into five levels: enterprise; mission; function; application; and personal. The Integration Model (IM) provides a basis for assigning IM integration responsibilities by making explicit the intersections of functions that can be categorized and assigned management responsibilities.

The application layers of the model are delineated based on their mission-specific and general-purpose use. The Mission area applications layer pertains to those applications tailored to specific mission needs (e.g., decision aids, battle management applications, imagery processing applications, message and signals processing applications) the mission area applications may make use of general support applications. The support applications layer provides generic services, common to multiple mission areas (e.g., word processing, spreadsheets, database query language.)

The application platform layer provides the common information processing and communications functions used in general-purpose and multimedia information management processing environments. A platform is composed of one or more processors, operating systems, kernel functions to support the operating system, and peripheral External Environment Interfaces (EETs) controlled by the kernel functions for devices such as terminals, printer, and storage devices. The application platform layer also includes Open System

Environment (OSE) programming services, user interface services, data management services, data interchange services, graphics services, and network services provided to mission-specific and support applications through Application Program Interfaces (API's). APIs provide the standard interfaces between mission and support applications and support applications and the platforms using the network services and the kernel-controlled EEIs use to interface to communications networks. The network services provide the communications protocol stacks the platform necessary to communicate, end-to-end, between support or mission-specific applications. The network service applications may include support for data, voice, video, and imagery (e.g., facsimile).

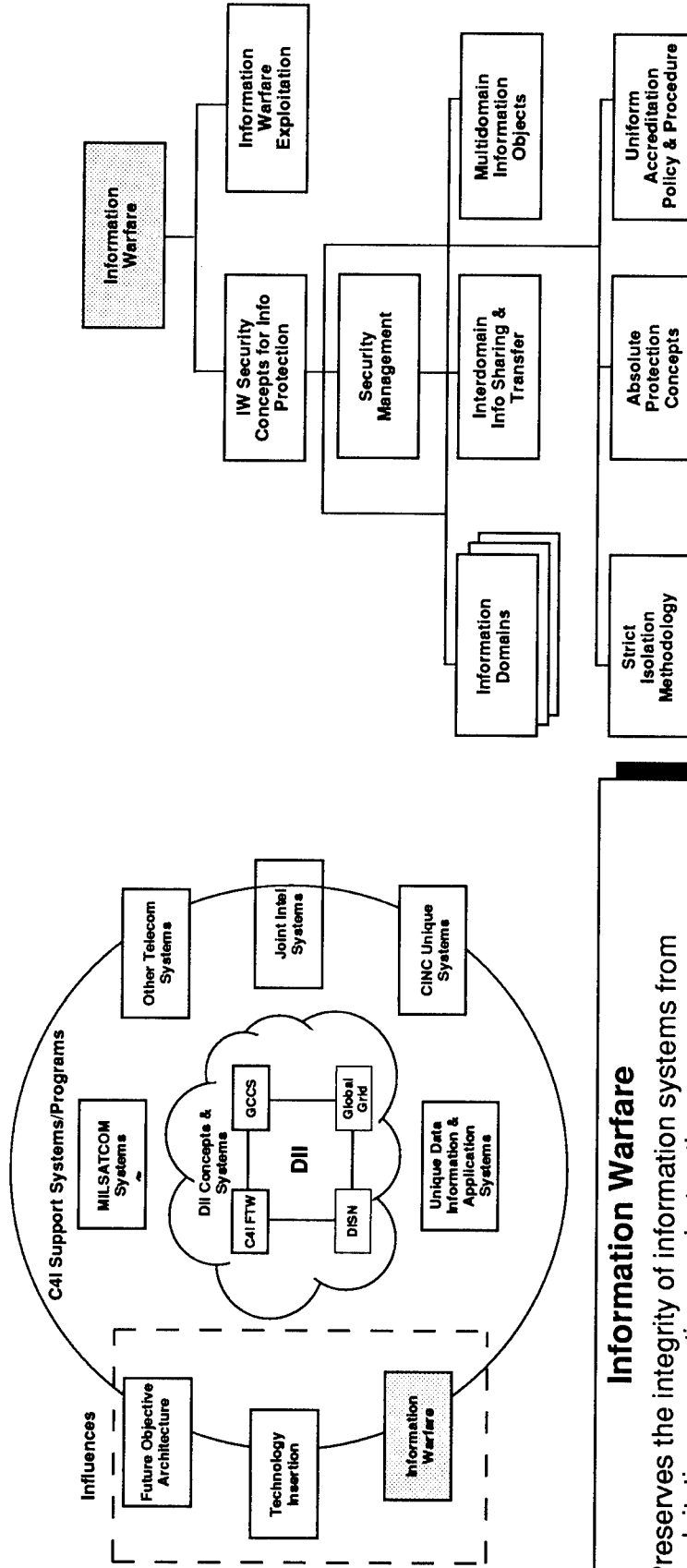
The External Environment Layer provides the external communication services necessary to provide platform-to-platform (information system-to-information system), and subsequently application-to-application services, across communication networks. External communications (the communication infrastructure) are composed of local level (e.g., base level) networks, and wide area, regional or metropolitan area (e.g., support for several bases of tactical assets), and global networks. The external environment layer also provides information services and human or computer interaction services for the platform to interact with local information interchange devices (e.g., peripherals) and with users. The external environment interfaces will be compliant with existing and future standards.

# **Section I - Chapter 11**

## **Information Warfare**

# Information Warfare Category

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## Information Warfare

- Preserves the integrity of information systems from exploitation, corruption, or destruction
- The aggregation and integration of C4, C4 countermeasures, information systems security, security countermeasures, and intelligence
- Develops IW policy, doctrine, strategy, tactics, techniques and procedures
- An integral component of all weapon systems which rely on information for operation
- Exploiting, corrupting, or destroying adversary information base and flow

I-11-2

Figure I-11-1, Information Warfare (IW)

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# Information Warfare

Figure I-11-1, Information Warfare (IW), depicts a notional view of the elements of IW. IW itself consists of actions taken to preserve the integrity of information systems from exploitation, corruption, or destruction while at the same time exploiting, corrupting or destroying an adversary's information system; and in the process, achieving an information advantage in the application of force. DII Information Warfare (DIW) is defined as the integration and application of all necessary operational, engineering, and security disciplines and intelligence (or counter intelligence) support to ensure the availability, integrity and confidentiality of information when and where it is needed throughout the DOD.

DIW is an aggregation and integration of C4, C4 countermeasures, information systems security, and security countermeasures, and intelligence. It supports efforts for better organizing and coordinating C4 programs to help ensure an optimized information system which is responsive to the very demanding information requirements. These requirements are inherent in: a smaller force structure; a rapid response capability; and advancing military technologies (such as deep strike and precision guided weapons and enhanced mobility of forces).

Information Warfare Exploitation, although a vital part of a comprehensive DIW mission area, is not addressed further in this document. However, concepts for attacking hostile resources remain under constant development and review, and will be exercised operationally as appropriate in future conflicts.

The threat to the DII is real and robust. DOD is placing greater emphasis on the generation and sharing of data across transparent echelons and organizations. As greater numbers of C4 systems are acquired, fielded and integrated into local and wide area networks, opportunities for concentrated attacks on the DII increase. Data protection schemes seek to ensure: 1) the confidentiality; 2) integrity; and 3) availability of information. The protector of data must have assurance that all three areas of protection are sound. Also, it is not necessary to pursue all three threat objective simultaneously to achieve the desired result. The loss of any one category may be sufficient to preclude use of the data.

The Warfighter is highly dependent on the completeness, accuracy, currency and availability of information for planning and executing military operations. However, the C4I on which the Warfighter depends for information, is currently considered to be highly vulnerable to intentional disruption or destruction in many cases. The DOD's current ability to respond to disruption of C4I functions needs to be improved, and the improvement is needed over a wide range of activities. Increased emphasis is being placed on the ability of the warrior to better protect information from intentional disruption, contamination or exploitation. There are several programs, unclassified and classified, which deal directly with the protection of information in all its types and forms. Associated

DIW policy, doctrine, strategy, tactics, techniques and procedures will continue undergo constant review and refinement through such programs.

The goal of integration and application of disciplines and support is an information infrastructure that is capable of providing complete and unaltered information while withstanding naturally occurring and malicious (insider and enemy) disruptions to (attacks against) the infrastructure. Specifically the DOD must have the capability to:

- Identify and manage risk to the DII
- Protect the DII against attack
- Repair the DII in the event of successful attack
- Manage information processing by, and flow through, the DII
- Define minimum DIW capability and maintain at least that capability

Thus, Information Warfare becomes an integral component of all weapon systems which rely on complete, accurate and current information for operation; especially those requiring ADP data base and application program support for execution (e.g. Automated Mission Planning Systems). The C4 support to weapon systems also has an IW component to consider. Systems such as: DDN, DSN, and GTN; Major databases such as JOPES/SORTS; and Application Programs are all vulnerable to IW and as such must be candidates for protection against electronic attack.

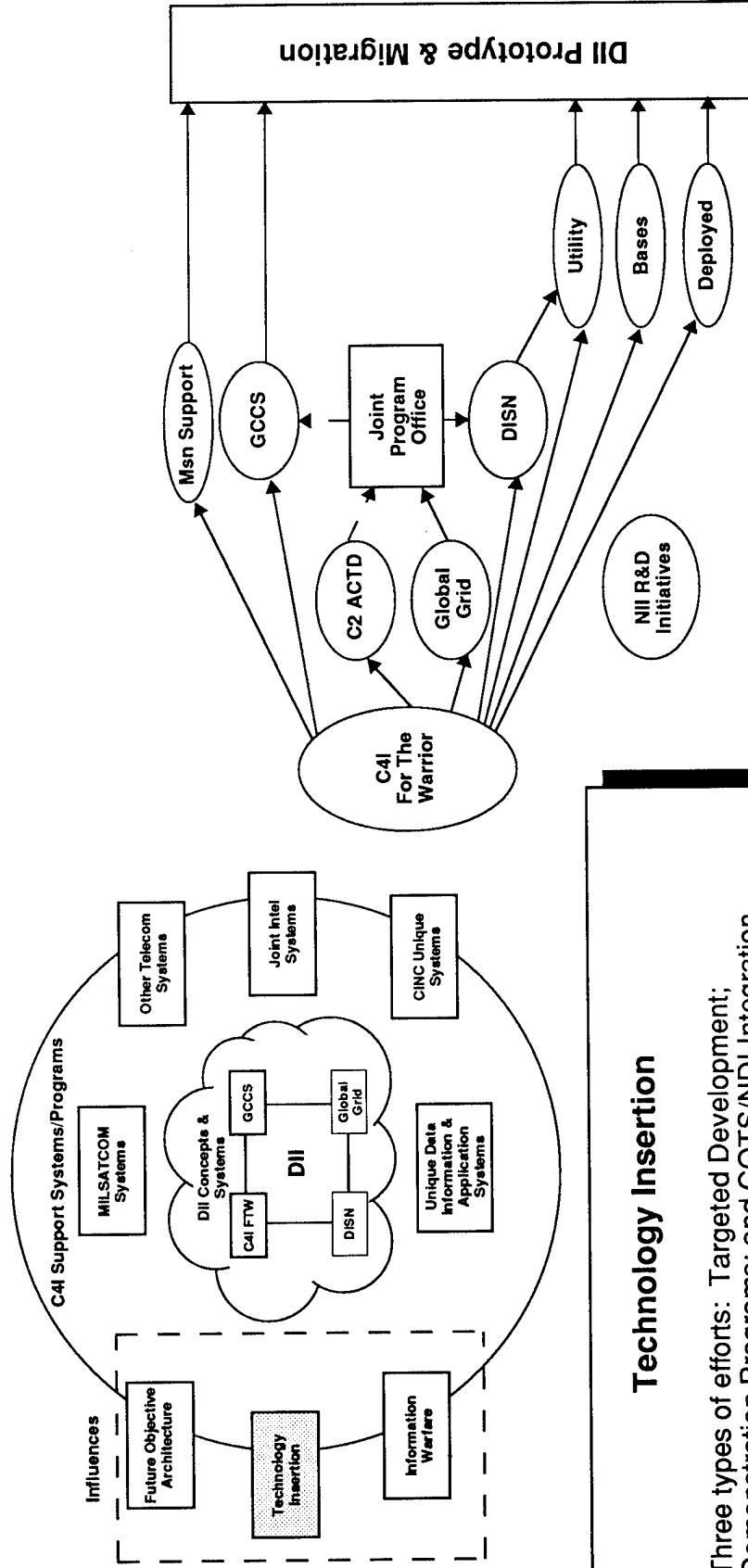
Information warfare security disciplines include: ADSEC, COMPUSEC, COMSEC, INETSEC, OPSEC, PHYSEC, TECHSEC and TRANSEC.

# Section I - Chapter 12

## Technology Insertion

# C4I Technology Insertion Activities

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## Technology Insertion

- Three types of efforts: Targeted Development; Demonstration Programs; and COTS/NDI Integration
- Dual use technology central to future defense planning
- Higher risk technology insertion attempted in the earlier stages of development
- BISDN technology insertion being planned now for "objective system"
- Example: Global Grid, Magic Programs

I-12-2

Figure I-12-1, Technology Insertion Activities

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# Technology Insertion

Technology Insertion programs help ensure that the latest developments in C4I technology and engineering are properly exploited and integrated into new system to help maximize the operational capability of systems at reduced costs. Figure I-12-1, C4I Technology Insertion Activities, provides a notional view of the activities within programs associated with the evolution to an Objective C4I Architecture which emphasizes interoperability.

There are three basic types of C4I Technology Insertion efforts: Targeted Development with a specific objective; Demonstration Programs, Common Off The Shelf (COTS) equipment, and Non-Developed Item (NDI). Figure I-12-2, Technology Insertion Mechanisms, relates the three types of efforts to the development cycle and the relative level of risk to cost, schedule and performance.

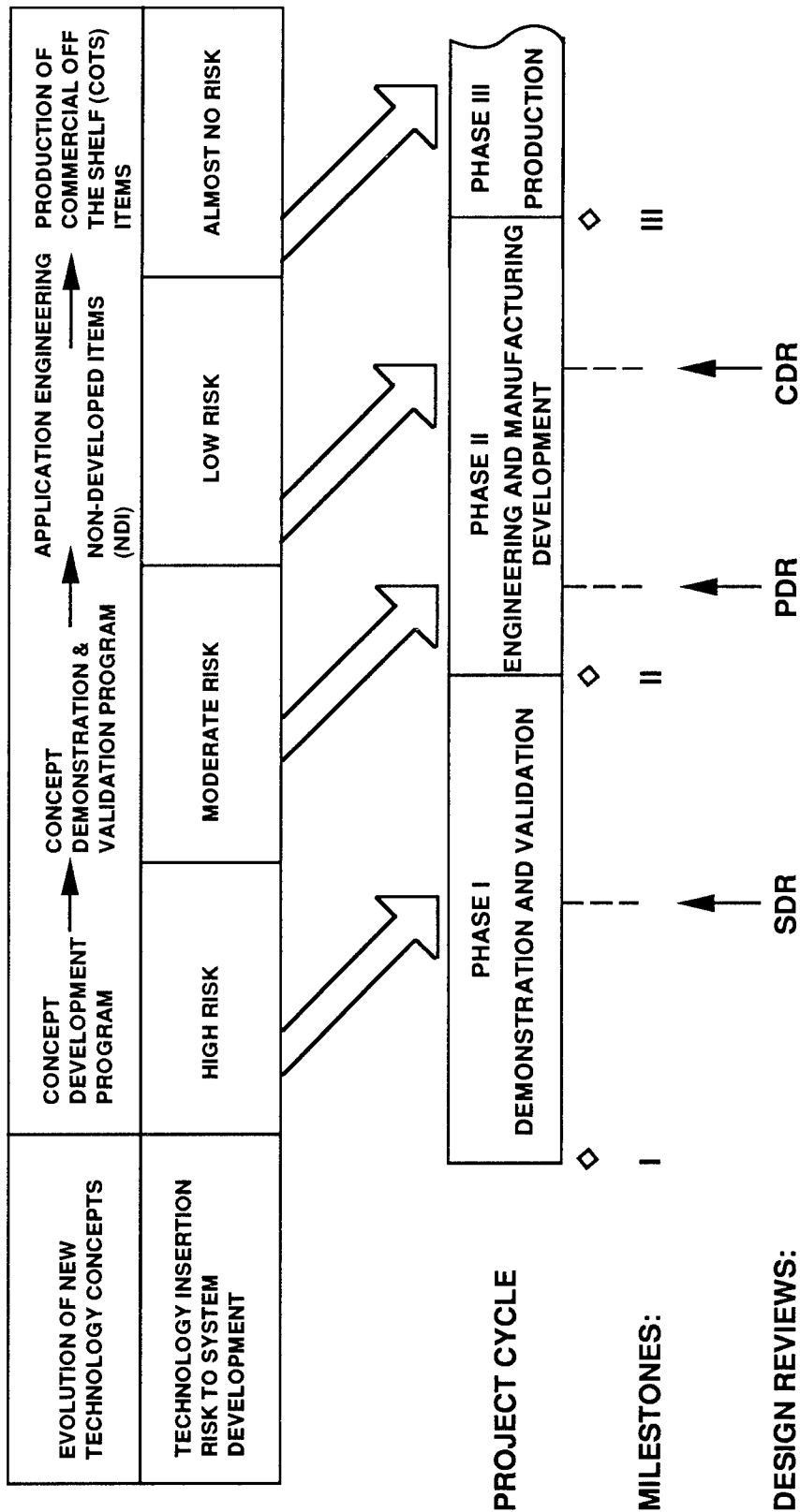
In preparing for technology insertion there are other factors to consider in addition to the Warriors needs in fulfilling the assigned mission. Dual-use technology will be central to future defense planning and spending. This offers three long-term benefits to the Warrior:

- Commercial technologies often outperform "military unique systems and can be placed in the user's hands more quickly
- Applications for the consumer marketplace have much larger production runs at lower costs, making the product more readily available for the fielding and maintenance of C4I systems
- The national industrial and technology bases can be maintained in the face of a declining military budget and spending for newer C4I technology.

Examples of high payoff R&D efforts having a significant portion of dual-use applications to military C4I include: semiconductor manufacturing; microwave and millimeter wave monolithic integrated circuits; electronics design and manufacturing; high performance computing and communications; microelectro-mechanical systems; and new electronic materials in general. as an example of Service trends for C2, USAF Technology thrusts include: bar coding; microcircuit technology; integrated data bases; and imagery.

# Insertion Mechanisms

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### **Technology Insertion to the DII for future Strategic/ Tactical Switching**

All major items of equipment addressed as "required" as components of the objective architecture switching subsystem are COTS/NDI items. Preplanned Product Improvements (P3I) are essential for moving effectively from near term to far term in a manner acceptable to the CINCs and Services. In the near term, work to develop, test, and field an ATM transmission capability for the Improved Tandem Switch must be considered. BISDN with SONET/ATM is the centerpiece of the objective architecture. Space must be provided in this Improved Tandem Switch to accommodate an ATM switch to be added at a later date. ATM may also be incorporated into PBXs using add-in ATM adapter cards as part of the migration strategy.

Military Enhancements to commercial data communications protocols and standards are also needed. Several military features have been identified in the data communications protocol area that are not adequately addressed by existing commercial data communications standards. These include the ability to preempt, various levels of priority connectivity, real-time attrition management of C4I losses, Information Warfare Defense, and network management and control.

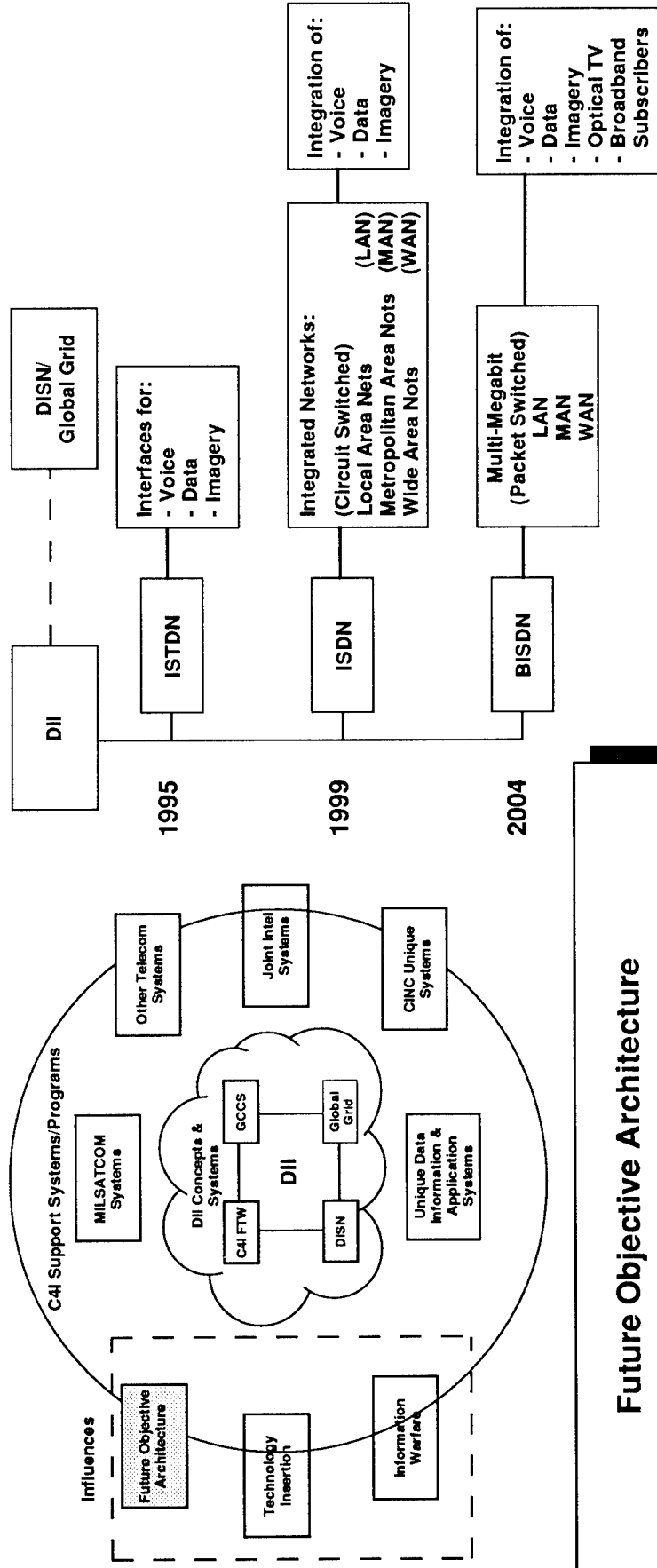
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# **Section I - Chapter 13**

## **Future Objective Architecture**

# Future Objective Architecture Evolution

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## Future Objective Architecture

- Evolution and integration into a seamless "Systems of Systems"
- Exploitation of new technology, standards, and protocols
- Seamless strategic-to-tactical and inter-MILDEP connectivity
- Objective architecture which stresses BISDN (SONET/ATM) technologies

Figure I-3-1, Future Objective Architecture Evolution

I-13-2

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# Future Objective Architecture

The military C4I Architecture has as an objective the integration into a "system of systems" the functions: Information flow; processing; and management. This umbrella system will have a maximum degree of freedom and flexibility based on the integration of C4I system components. The system will exploit new technologies, protocols and standards as available in the appropriate time frames. (New technologies will result, in part, from the Global Grid Program.) Figure I-13-1, Future Objective Architecture, depicts the evolution of military C4I architectures as systems evolve toward the objective of a seamless system which can meet the C4I needs of the warrior responsively, completely and accurately, and with the maximum degree of "user friendliness".

Historically, a major obstacle to interoperation among strategic (e.g., DCS long-haul systems) and tactical C2 assets has been that tactical systems are designed to accomplish a service unique mission, with less emphasis on interoperability. Interfaces between tactical and strategic systems currently are the most incompatible and require customized gateways for operational interoperability. Interfacing in the Theater/Tactical environment is further complicated by the ongoing transition from analog to digital technology.

Each MILDEP is currently in the process of developing future-oriented, objective C4I architectures to transition from today's heterogeneous systems to seamless strategic/tactical architectures that are interoperable with other strategic/tactical architectures, as well as with other telecommunications and computing systems. Common goals are:

- Evolution to open systems architectures, standard protocols and applications.
- Increased use of commercial transmission facilities.
- Increased use of non-developmental items (NDI) and common multimedia platforms.
- Seamless strategic-to-tactical and inter-MILDEP connectivity.
- Transition towards C4I systems and services geared for the warrior.

For the near term, DISA initiated the Integrated Tactical/Strategic Data Network (ITSDN) architecture for integrating strategic/tactical capabilities in future services packet networks. (The DDN provides packet switching in the strategic environment.) The ITSDN architecture is an internet of a variety of strategic/tactical packet data networks. The goal is a single homogeneous network; however, the near-term objective is to provide connectivity among the MILDEP systems that are being procured with the DDN. Gateways being acquired in the near term will be interconnected through ITSDN. The systems are the Army Tactical Packet Network (TPN), the Air Force Secure Data Communications (TASDAC) system, and the Joint Tactical Forces Tactical Network (JTFTN).

In the mid term the backbone of the fixed strategic systems will be based on voice/data circuits using ISDN technology (rather than on the current analog systems). ISDN will provide voice services for both local and wide area networks. (The digital TRI-TAC will remain one of the primary backbones in the tactical environment.) ITSDN will continue to provide gateways and interoperability between the various MILDEP systems. The Army TPN will continue to be the primary means of data transport for C2 information. It will expand to handle throughput requirements. Interfaces will be developed to the Services' Data Distribution Systems.

ISDN is a digital communication network that provides various types of services in an integrated fashion. It is an integrated service digital communication network that encompasses basic voice communication, allows integrated provision of low-quality video and data services. Its targeted services are mainly narrowband services such as telephone, facsimile, telex, telemetry, telewriting and data terminals. The main feature of the ISDN is that the subscriber is interfaced with the communication network through a single access so that several services can be provided to him in unison, and that connection between the subscribers is accomplished digitally.

In the far term the DISN will implement a Broadband ISDN (ATM/SONET) capability for use in deployed systems and equipment. The SONET/ATM network is the centerpiece of the objective architecture. High-speed packet and video communication services by nature require high-speed and broadband communication channels. Thus there is a necessity for Broadband ISDN (BISDN), which will be able to provide such services in an integrated fashion by the early twenty first century. It will serve as the common interoperable transport for voice, data, and imagery services; and offer economies of scale and efficient, effective network management and control. Capacity will be dynamically allocated as the warrior's needs dictate. The Global Grid Program has been designed to provide a prototype testbed in which new concepts can be evaluated.

The demand for high-speed packet communication and video communication services will continue to increase and the capability for their provision must steadily improve as well. Development into gigabit communication networks is being planned. High-speed packet and video communication services by nature require high-speed and broadband communication channels; thus there is a necessity for Broadband ISDN (BISDN), which will be able to provide such services in an integrated fashion by the twenty first century.

Conceptually, the BISDN is no more than an extension of the ISDN to accommodate broadband services. However, in implementation the BISDN uses a mode of transmission that is completely different from the ISDN because of the sheer diversity of services. As a means of accommodating various characteristics and distribution properties of broadband service data, The Asynchronous Transport Mode (ATM) is employed. It achieves packet-oriented integration of broadband services, and hence has a fundamental difference from the ISDN, whose service integration is circuit oriented. Since military C4I systems must continue to meet the needs of the warrior as the evolution to a seamless interoperable environment progresses, the evolution itself must be carefully managed as a global "System of Systems".

# Section - II

## C4 Systems Descriptions

## C4 Systems Descriptions

This section presents a short synopsis of C4I systems description found in CINC C4 systems master plans, and Service and agency documents. It is intended to be a short reference for the C4I assessment process.

**ALARM.** The ALARM system will provide worldwide detection and tracking of ballistic missiles during launch and boost phases. The ALARM replaces the terminated FEWS program as the planned follow-on to the current Defense Support System (DSP). The complete ALARM system will consist of a constellation of satellites providing continuous surveillance of the earth's surface with short- and medium-wave infrared sensors. The sensors will detect ballistic missile (ICBM, IRBM and SLBM) launch. On-board processing will initiate missile tracking and provide a determination of missile type. Processed data will be provided to a satellite ground station for man-in-the-loop assessment of events and forwarding to all users. The ground segment includes relocatable terminals and relay ground stations.

**ACE High Network.** A terrestrial network of medium capacity tropospheric scatter and line-of-site microwave links, ACE HIGH provides transmission capability to NATO subscribers. It extends in a geographical arc from Norway to Turkey. Branch routes from the main network trunk provide circuits to user concentrations. Wartime utility is marginal, as there is no reconstitution capability. ACE HIGH is being replaced with the NATO Terrestrial Transmission System (NTTS), which will be an all-digital multichannel communications network.

**Advance Combat Direction System (ACDS).** The ACDS is one of several Combat Direction Systems (CDS) in use in the fleet. CDS is a generic term encompassing the Naval Tactical Data System (NTDS), ACDS Blocks 0 and 1, and the Tactical Data System (TDS) aboard amphibious ships. The CDS is the primary means for monitoring the overall tactical air, surface, and subsurface environment, and is the central repository for all tactically significant tracks for the battle force/battle group (BF/BG) as well as the ship in which it is resident. The CDS consists of equipment, computer programs, and personnel who are engaged in collecting, correlating, displaying, and disseminating own-ship and force track information, evaluating track threat potential, assigning own-ship weapons, generating and disseminating force orders, and monitoring own-ship and force engagements.

**Advanced Cruise Missile (ACM) Mission Planning System (MPS) (ACM MPS).** ACM MPS provides assistance to integrate, operate, test, maintain and enhance software and related data used to model ACM missions.

**Advanced Data Controller (ADC).** ADC provides fast and reliable error-free data transfer over secure, UHF SATCOM communications channels. ADC also provides networking features that allow many users to cooperatively share a single channel. ADC comes in a rugged, TEMPEST chassis with a menu-driven, user-friendly, man-machine interface.

**Advanced Field Artillery Tactical Data System (AFATDS).** AFATDS is one of five principal components of the Army Tactical Command and Control System (ATCCS). As a battle management system, AFATDS will provide automated fire support for close, read, and deep operations, and non-nuclear and chemical fire support assets. AFATDS will enable the artillery commander to receive a request for a fire support mission, select the ammunition, assign the firing unit, and calculate the ballistic solution in a matter of seconds. AFATDS is composed of a common suite of hardware and software employed in varying configurations at different operational facilities (or nodes) interconnected by tactical communications. Both hardware and software will be capable of being tailored to perform the fire support command, control, and coordination requirements at any level of command. Replaces TACFIRE.

**Advanced Narrowband Digital Voice Terminal (ANDVT).** ANDVT is a joint program to provide a narrow band terminal to enable secure voice/data exchange for ship, aircraft, land mobile, and fixed applications using high frequency (HF), very high frequency (VHF), ultra-high frequency (UHF) or UHF satellite radios, wire lines, or 2.4 kilo bits per second digital transmission equipment. Data rates are 300, 600, 1200, and 2400 bits per second. The program consists of three individual systems: TACTERM for ship/shore, mobile/vehicular, and airborne uses; Satellite Voice Terminal for narrow band secure voice via SATCOM; and MINTERM, KY-99, low power man pack version.

**Advanced Planning System (APS).** APS is the prime air tasking order (ATO) generator for the Contingency Tactical Air Control System (CTACS) Automated Planning System (CTAPS). APS has automated inputs from intelligence, jamming, targeting, routing, airspace management, and logistics subsystems. APS has the capability to a) Build interdiction and offensive counter air mission packages; b) Schedule flows for close air support, defensive counter air, and air refueling missions; c) Plan reconnaissance and support missions; d) Track tanker fuel, weapons, and aircraft assets; and e) Display the air battle plan at any point in the process to gauge adherence to the commander's guidance.

**Advanced Single Channel Manpack (ASCAMP).** This extremely high frequency (EHF) man-portable system will meet a critical need for worldwide assured voice and data via satellite communications in a severe electronic warfare environment. It is intended to operate in an intense jamming environment, having a low probability of detection and intercept.

**Advanced Support Interactive Control System (ASICS).** ASICS is a graphics package used to graphically display and manipulate CMARP run results and Combined Mating and Ranging Planning System (CMARPS).

**Advanced Tactical Air Command Center (ATACC).** An improved system for C2 of Marine Air Ground Task Force (MAGTF) air operations that will provide the tactical air commander with the facilities needed for planning, controlling, and coordinating MAGTF air operations. The TACC, AN/TYQ-1; Tactical Data Communications Central, AN/TYQ-3A; and associated equipment currently employed to support the TACC are inadequate to meet the projected operational requirements in the 1990-2000 time frame. The TACC consists of two mutually supporting sections equipped for carrying out planning and operational functions. The ATACC will provide the TACC with a planning segment and an operations segment consisting of hardware and software designed to accomplish TACC functions. The ATACC-supported TACC must function in concert with other agencies to provide responsive direction and coordination of MAGTF air assets in the accomplishment of its responsibilities. The ATACC will provide the versatility to deploy TACC planning and operational segments commensurate with the functions of Marine Expeditionary Brigade (MEB) and MEF and to build up or scale down its capabilities by augmenting, reconfiguring, or reducing modular segments of the system as operational requirements change.

**Advanced Tactical Airborne Reconnaissance System (ATARS).** ATARS is an advanced airborne sensor system that uses either a digital low-altitude electro-optical (EO) or an infrared (IR) imaging system to be carried on either fixed wing aircraft (i.e., US Air Force F-16s, or US Navy/US Marine Corps F/A-18RCs) or on the joint-service extended or medium-range unmanned aerial vehicles (UAVs). In addition, the digital imaging radar, the advanced synthetic aperture radar system (ASARS) is being developed for use in both fixed wing aircraft and UAVs. These sensor systems provide the Services with an all-weather, day- night, real-time imaging collection capability. The airborne reconnaissance platform will be able to relay the collected imagery to the associated afloat/ashore processing facility, the Joint Services Imagery Processing System (JSIPS), through a digital down link, for real time processing and dissemination.

**Aerial Port Documentation and Management System (ADAM III).** ADAM III (cargo portion of the Consolidated Aerial Port Subsystem) is an Air Mobility Command (AMC) unclassified system for automating cargo processing operations at major Aerial Ports Of Embarkation (APOEs) with high traffic workloads. It records receipt, staging, and loading of cargo at APOEs and prints out the aircraft cargo manifest upon completion of loading. ADAM III will be replaced by CAPS II.

**Aeromedical Patient Evacuation System (APES).** APES is an automated system to assist in manifesting patients for med-evac flights and scheduling med-evac flights and crews for subsequent patient movements.

**Afloat Correlation System (ACS).** The ACS will be part of the Navy C2 system afloat; and, when introduced into the fleet, will be part of the Navy Tactical Command System Afloat (NTCS-A) umbrella program that will be installed on all CV/CVNs, and flag configured ships (including Amphibious flagships). It is an automated information management system that

incorporates the functions of Prototype Ocean Surveillance Terminal (POST), and integrates all contact and threat warning data from external sources and sensors with data from BF/BG sources and sensors. ACS has separate general service (GENSER) and sensitive compartmented information (SCI) processors which are integrated via cryptologic interface devices (CIDs). The ACS provides automatic multiple emitter to platform correlation, a multiple hypothesis geographic tracker, and combined automatic parametric, attribute, and geospatial correlation. Automatic ambiguity resolution and improved throughput with parallel processing will greatly improve the timeliness and consistency of the resulting tactical picture of up to approximately 4,000 miles from the BF/BG. The ACS will improve the Navy's fighting capability by extending the BF/BG commander's tactical horizon beyond the limited range of organic sensors, by providing improved all-source correlation and tactical threat warning, and by supporting Over-the-Horizon Targeting (OTH-T). The ACS integrates SCI with GENSER data in order to provide the CDS with sanitized track updates and tactical threat warnings. The ACS will provide tactical naval forces with the capability to process the sensor data rates anticipated by the late 1990s from new and improved wide-area surveillance and intelligence sensors and have the capacity to operate effectively in the 1990s advanced sensor environment.

**Afloat Planning System (APS).** APS supports TOMAHAWK mission data planning for TOMAHAWK land-attack missiles (TLAM), and will move afloat when the APS is deployed, together with the TLAM Block III Upgrade, which adds a satellite global positioning system (GPS) navigator to the missile. These advances will shorten planning time and provide a capability dedicated to the battle group commander's specific, localized interests. It will also allow mission routes to be generated over areas where no missile navigation terrain contour maps exist, further expanding the number of targets at risk. APS can modify mission data on current tactical, environmental, and intelligence information, including data from hard copy imagery such as Tactical Airborne Reconnaissance Pod System (TARPS). It can also generate a full conventional mission including route plans, maps, and navigation and target data from stored data.

**Air Carrier Analysis Support (ACAS).** The Air Carrier Analysis Support System (ACAS) provides performance measures for interpretation by experienced DOD analysts. (ACAS cannot forecast a tragic air accident, nor can it judge whether one carrier will be more or less safe than another on the next DOD mission.) ACAS can assist experienced analysts in spotting unfavorable trends and/or deviations from normal patterns of behavior and can focus the attention of DOD personnel on those carriers most in need of closer examination.

**Air Command And Control System (ACCS).** The NATO ACCS program is an evolutionary command and control system design and architecture to integrate planning, tasking and execution functions for tactical air operations throughout Allied Command Europe (ACE). ACCS sets the standard for upgrade of existing antiquated C3 systems. ACCS will use the

NATO Terrestrial Transmission System (NTTS) as well as host nation networks and user nation tactical communications.

**Air Force Air Request Net (AFARN).** AFARN is a dedicated HF single sideband (SSB) net used by Tactical Air Control Parties (TACPs) to transmit requests for tactical air support to Air Sector Operations Centers (ASOCs) or Airborne Battlefield Command and Control Centers (ABCCCs) in the event the ASOC cannot be reached. The ASOC serves as Net Control Station. The AN/MRC- 107A mobile communications center, transported on a utility M-151 truck, is used by the TACP to establish this net with the ASOC or ABCCC.

**Air Force Command and Control System (AFC2S).** The AFC2S program will provide an integrated data base structure to support C2 planning of USAF conventional combat and support forces throughout the conflict spectrum (peace through global war). Seventy-three command-unique systems and 10 standard Air Force systems will ultimately comprise the AFC2S integrated data base structure.

**Air Force Integrated Communications Network (AFNET).** AFNET is one of nine "Stove-piped" systems being integrated into a common user network (e.g. with NAVNET and DLANET) as part of the DISN - Near Term effort. The AFNET is a worldwide diverse multi-use network, which includes an interconnection with the DCTN. The DISN-NT consists of long-haul common-user facilities, equipment, and services among and between the Services and Agencies to support information exchange needs for various users.

**Air Force Mission Support System (AFMSS).** AFMSS was conceived by the general Officer Steering Group as the migration Mission Planning System for the Air Force and US Special Operations Command, replacing the existing "stovepipe" systems for individual aircraft and weapons by 1999. It provides automated pre-mission planning and materials preparation, post-mission debriefing and data acquisition and management capabilities on a commercial workstation platform.

**Air Force Rescue Coordination Center - Management Information System (AFRCC-MIS).** Management Information System—Employed to better manage Search and Rescue (SAR) activities, both military and civilian, within the Continental US. Upon completion, plans are to make it available to all Rescue Coordination facilities around the world.

**Air Force Resource Management System (AFORMS).** AFORMS provides aircrew information to flight operations managers. Information includes flying experience, training, readiness, qualification, and incentive pay eligibility.

**Air Force Wing Command And Control System (AFWCCS).** AFWCCS provides Tactical Air Forces (TAF) wing commanders and their battle staffs and automated, secure, survivable, command and control system. The system provides a near real

time, accurate, composite picture of wing resources to support combat sortie generation and reporting. AFWCCS is the primary recipient of the air tasking order (ATO) from CTAPS.

**Air Terminal Communication and Control System (ATCC).** ATCC provides Command and Control (C2) information about logistics activities (i.e., airlift schedules) via a central data base at Wright-Patterson Air Force Base.

**Air Vehicle Force Application System (AFAS).** AFAS is used to develop aircraft mission routes and enables war planners to define processing parameters. It simulates aircraft routes using aircraft performance, standard planning factors and wind data. AFAS produces flight plan data for all strategic aircraft and command summaries for reconnaissance aircraft. It also produces data for unit level systems which build aircraft cruise missile on-board mission data tapes.

**Airborne Battlefield Command and Control Center (ABCCC).** The ABCCC consists of an air refuelable EC-130E aircraft equipped with an AN/USC-48 capsule. When manned with its 15 member battle staff, the ABCCC provides a command, control, communications, and intelligence (C31) platform capable of being forward deployed to provide direction to air-ground forces executing the Air Tasking Order (ATO). The ABCCC's extensive communications capability (8 ultra high frequency (UHF), 8 very high frequency (VHF) amplitude modulated/frequency modulated (AM/FM), 4 high frequency (HF), and 3 UHF satellite communications (SATCOM)) combined with its mobility supports a demonstrated capability to communicate directly across the combat arena. The ABCCC system improvement program will incorporate a tactical data link (TADIL) J Joint.

**Airborne Warning and Control System Improvements (AWACS Improvement).** AWACS improvements will include HAVE QUICK UHF/VHF jam-resistant communications, electronic warfare support measures (ESM) additions to the AWACS surveillance system for passive detection, electronic counter countermeasures (ECCM) enhancements, and improved surface radar picture, and improved surveillance radar computer, and JTIDS Class II/TADIL-J integration. These improvements will enable the AWACS to control fighters in a dense jamming environment and provide jam-resistant connectivity between major C2 elements.

**Airlift Deployment Analysis System (ADANS).** ADANS is AMC's integrated airlift planning and scheduling system. It prepares movement tables and schedules for Operation Plans (OPLANs), Operation Orders, channel airlift requirements, and tanker schedules. ADANS also assists in transportation feasibility analyses. The primary mission areas served by ADANS are airlift and aerial refueling. The efficient and timely employment of airlift and refueling assets requires an extensive planning, scheduling, and analysis effort. ADANS provides AMC planners and schedulers the automated tools necessary to plan for and schedule the extensive number of air mobility missions flown by AMC during peacetime and contingency operations. ADANS supports the scheduling and planning requirements associated with recurring air-

lift operations known as channels, Special Assignment Airlift Missions (SAAMs), the assignment of specific aircraft to scheduled missions, and the ability to generate mission schedules to support specific war plans. ADANS is interoperable with the AMC's core execution system, the Global Decision Support System (GDSS). Once ADANS produces a schedule, it is forwarded to GDSS where it is flight followed throughout execution. ADANS is a Corporate Information Management (CIM) designated system as a Command and Control support system. ADANS supports the CIM effort by utilizing standard protocols and standards compliant hardware and software. ADANS has made a conscious effort to adhere to an "open systems" approach.

**Airlift Services Industrial Fund Integrated Computer System (ASIFICS).** ASIFICS will provide a framework for development of a comprehensive information management system for HQ AMC/FMI. This system will support all accounting, budgeting, and analysis functions necessary for the financial management of the AMC Airlift Service. The system will perform the functions of data collection, revenue computation, billing, accounts receivable, tariff development, analytical reports, disputed billing research, financial statement preparation, accounts payable, budget preparation, budget execution, and additional functions as necessary to satisfy other specific information needs of the user.

**Airspace Deconfliction System (ADS).** Provides a "what-if" analysis capability and supports airspace modifications leading to an effective airspace planning capability at the force-level structure of the AOC. Provides the following capabilities: a) Generate an Airspace Control Order for dissemination as part of the ATO or as a separate message; b) Deconflict airspace based on time, space, altitude, and type; c) Support airspace grouping to allow for planning tomorrow's war and executing today's war.

**Alaskan Radar System (ARS).** ARS provides surveillance of mainland Alaska. The radars are part of the Joint Surveillance System (JSS) and provide coverage in and near Alaska as a supplement to the DEW line (Sections DANE, DEW, and JSS). The system provides detection, identification, and flight following of all aircraft entering or operating within the Alaskan Air Defense Identification Zone (ADIZ).

**All Source Analysis System (ASAS)** The ASAS is a ground-based, mobile intelligence processing system designed to provide automated combat situational displays and support to the combat commander in the areas of intelligence and collections management, all-source, target and situation analysis, single and multi-source processing and reporting, electronic warfare, and operational security as well as support to the generation of intelligence products in those areas. Elements of ASAS will provide seamless support to warfighters at Echelons Above Corps to Brigade level. At the Corps and Division levels ASAS will operate at the Analysis and Control Element (ACE). Sanitized intelligence reports and products will be available from the collateral level ASAS. At Echelons Above Corps ASAS will be tailored to meet unique theater requirements. At the Maneuver Brigade and Battalion level ASAS collateral workstations will be employed.

The ASAS architecture is modular in design so that the Division ASAS, or Corps ASAS can be configured differently due to force structure and mission requirements.

**Allied Deployment And Movement System (ADAMS).** ADAMS is being developed by SHAPE Technical Center under the sponsorship of SHAPE. It will eventually become part of the Allied Command and Control Information System (ACCIS). ADAMS is a tool to support rapid planning and execution of military movements within the Alliance's new focus on crisis response. The current version of ADAMS includes a force request and commitment module, which will be subsumed by ACCIS, and a deployment planning module. The latter allows NATO authorities to prescribe deployment requirements in terms of forces, destinations, and delivery dates. Nations then round out the deployment plan with unit detail in Standardization Agreement (STANAG) 2165 format, complete itineraries, and time lines. Facilities are also provided for Nations to coordinate movement plans. Eventually ADAMS will include modules for movement scheduling and execution monitoring, and for movement simulation and analysis.

**Alternate Command Center Mobile (ACCM).** ACCM is a transportable command and control (C2) capability designed to satisfy the requirements of a deployed commander in a variety of mission scenarios. The system includes the following major components/subsystems housed in a series of 20 foot containers which can be transported in a C-130 aircraft: a) Multi-transponder super high frequency (SHF) satellite communications system including a 10 foot diameter antenna b) Milstar Air Force mobile command post terminal c) HF transmitters and receivers d) UHF line-of-sight (LOS) and SATCOM transceivers e) Very low frequency (VLF) receiver f) Operations Battlestaff Shelter with seven workstations providing access to the Worldwide Military Command and Control System (WWMCCS), Operational Support System (OSS), Contingency Tactical Air Control System (TACS) Automated Planning System (CTAPS) (ATO portion only), Automatic Digital Network (AUTODIN) access, and office automation applications g) Intelligence Battlestaff Shelter similar to the Operations Battlestaff Shelter which includes a Joint Deployable Intelligence Support System (JDISS), AUTODIN access, and other automatic data processing (ADP) applications h) ADP/Strategic Shelter containing an AN/GSC10 Air Force Satellite Communications (AFSATCOM) terminal, a Communications Support Processor (CSP), and those systems necessary to allow the system to operate in a self-sufficient mode.

**Alternate System HQ (ASH).** The ASH serves as HQ USEUCOM alternate command center. The ASH is located at RAF High Wycomb, UK and contains essentially the same C3 capabilities as the USEUCOM Command Center (CC). Integrated TW/AA enhancements scheduled for installation in the primary command center will also be installed in the ASH.

**Amphibious Warfare Over-the-Horizon (OTH) C2 (AMW OTH C2).** AMW OTH C2 will provide accurate real-time information to the command ship on the position and movement of all surface-borne landing craft within the amphibious landing

area. It will display unit identification and positional data in the command ship, disseminate navigational information among force units and provide a digital communications link capable of exchanging pre formatted messages.

**AN/SMQ-11 Satellite Receiver/Recorder.** The AN/SMQ-11 is the next generation environmental satellite receiver-recorder for use aboard selected Navy ships and shore locations. The AN/SMQ-11 is capable of receiving remotely-sensed data from the Defense Meteorological Satellite Program (DMSP) satellites, the National Oceanic and Atmospheric Administration (NOAA) Television Infrared Observation Satellite (TIROS-N) (High Resolution) satellites, and the Geostationary Operational Environmental Satellites (GOES). The system can provide black and white hard copy prints of the data transmitted by these satellites within three minutes of the conclusion of the transmission. Data retention on magnetic tape without operator intervention permits automatic archiving of consecutive satellite passes for subsequent enlargement and/or enhancements. The AN/SMQ-11 will digitally interface with the Tactical Environmental Support System (TESS) and pass the images to the TESS for interactive analysis, enhancement, enlargement, annotation, and dissemination to other TESS connected systems (such as NTCSS-A). The AN/SMQ-11 will provide the Navy with secure, high-resolution, direct readout of visual and infrared imagery in support of warfare areas such as Antisubmarine Warfare (ASW) and Anti-air Warfare (AAW). In conjunction with C3I systems, it will not only support tactical planning and execution, but will improve the accuracy of environmental assessments and inputs as well.

**AN/TRC-170(V)3 Troposcatter Radio Set.** The AN/TRC-170 provides the capability for SHF transmission and reception of 60 traffic channels for digital voice, analog voice, and quasi-analog or digital data signals. Operational modes include internodal trunking, remote subscriber access, subscriber access, dedicated trunking, and multi-trunking over either LOS distances or troposcatter transmission ranges up to 200 miles. The AN/TRC-170(V)3 will be employed at Marine Expeditionary Force (MEF), Marine Division, Force Service Support Group (FSSG), and Marine Aircraft Wing (MAW).

**AN/UYQ-3A Air-Transportable Direct Air Support Central (DASC).** The AN/UYQ-3A is an air-transportable shelter equipped to enable Marines to control and coordinate the employment of aircraft in the close support of ground combat forces. The DASC typically operates directly under the Tactical Air Command Center (TACC) or supplements the capabilities of the larger, fixed DASC in a MAW. Seven operators within the DASC have front-panel selection of voice radio communications in the VHF, UHF, and HF frequencies. In addition, each operator can select intercommunications with the other operators or access external telephone communications. The AN/UYQ-3A is designed to operate from the bed of an M-923 truck, from within a suitably modified C-130 aircraft, or from a fixed ground location.

**Analysis of Mobility Platform (AMP).** AMP is a prototype transportation modeling tool whereby various transportation models can be arbitrarily added to simulate end-to-end transportation movements from a home station to a theater assembly area or

logistics support area. It will provide the national Command Authorities (NCA) with accurate answers to such C2 questions as lift capability, lift required, and closure estimates. Models included in AMP are Mobility Analysis Support System, Model for Inter-theater Deployment by Air/Sea, and the Enhanced Logistics Intra-theater Support Tool.

**Anti-Radiation Missile Decoy (ARM DECOY).** The ARM Decoy will improve the survivability of the AN/TPS-43E or AN/TPS-75 radar systems. It will use a small, portable, low power radar transmitter.

**Anti-Drug Network (ADNET).** An integrated, open systems network of workstations, enabling diverse DOD/LEA counter drug operational and intelligence elements to rapidly transfer graphic, text, and contact data classified up to the collateral SECRET level.

**Antisubmarine Warfare Operations Center Upgrade (ASWOC Upgrade).** This program is a planned upgrade of the ASWOC C2 and ASW Communications (ASCOMM) capabilities. The ASWOC consists of four discrete subsystems: C2 subsystem, acoustic analysis subsystem, ASCOMM subsystem, and facilities subsystem. The upgrade system will have enhanced mission capabilities to support all ASW operations including ASWOC-to-ASWOC and ASWOC-to-Navy Command and Control System (NCCS) nodes data exchange; mission planning; tactical communications connectivity (record, data, and voice) with in-flight mission air-prediction; sensor analysis; contact correlation and reporting of equipment failures; weapon selection; improved and increased use of meteorological and oceanographic products; and system security. Significant reliability/maintainability improvements will also be accomplished by the completion of permanent buildings for housing the ASWOCs.

**Armed Forces Satellite Transmitted Radio Service (AFSTRS).** A satellite distribution system used to transmit radio news and information programming from the Armed Forces Radio and Television Service (AFRTS) Broadcast Center to AFRTS outlets and self-contained, transportable down link receivers worldwide. Links are via the International Maritime Satellite (INMARSAT) system.

**Army Battlefield Command System (ABCS)** ABCS is the emerging Army concept for the Army "system of systems" utilizing a seamless architecture evolving from the Army/Tactical Command and Control System (ATCCS) from echelons above Corps through Brigade and below. ABCS will link strategic, theater, Joint and allied C2 systems across the full range of battlefield and operations other than war functions. Major components of ATCCS are: MCS, ASAS, AFATDS, FAAD C2I and CSSCS. Replaces the Army Command and Control System (ACCS).

**Army Command And Control System (ACCS)** (replaced by ABCS). ACCS is the aggregate program consisting of all the communications and ADP hardware and software which will provide C2 support throughout the Army. It is a collec-

tion of equipment, operating procedures, doctrinal processes and relationships, personnel and organizations. It consists of the Army Tactical Command and Control System (ATCCS), Echelons Above Corps Communications (EAC COMMs), their interconnections, and other Army information management systems.

**Army Company Information System (ARCIS)** Automated system that runs on existing hardware and is designed to support the company commander in the performance of his information management functions. It contains over 40 task modules to complement existing systems that support key functions in personnel, training, and readiness.

**Army Data Distribution System (ADDS).** ADDS consists of the Enhanced Position Location Reporting System (EPLRS) and the JTIDS. Formerly, the two systems were joined in a program known as the Position Location and Reporting System (PLRS)/JTIDS Hybrid (PJH). In the ADDS, EPLRS will provide data communications support for weapons systems, sensors, and C2 elements that have relatively low data throughput requirements. This function is in addition to PLRS functions of providing position location, navigation, and identification information to C2 systems and units equipped with Enhanced PLRS User Units (EPUUs). JTIDS is a broadcast and point-to-point information distribution system that also provides position location and navigation information to its users. JTIDS terminals will provide communication support to weapon systems, C2 elements and other key facilities of Army Air Defense Artillery (ADA) units that require a high volume of data throughput.

**Army Food Management Information System (AFMIS).** The Army Food Management Information System (AFMIS) provides automated support and management of day-to-day administration of the Army's food service and subsistence supply programs. AFMIS consists of four functional modules which support the dining facilities, food advisors and subsistence supply activities.

**Army Global Command and Control System (AGCCS).** AGCCS is currently being defined by the Army. It will be the Army component of the Joint Global Command and Control System (GCCS). AGCCS will be built from applications programs developed by the Army World wide Military Command and Control System Information System (AWIS), the Standard Theater Army Command and Control System (STACCS), and the Echelon Above Corps (EAC) portion of the Combat Service Support Control System (CSSCS).

**Army Integrated System Control (AISYSCON).** An automated theater-wide system that signal S3 staffs will use to manage battlefield information systems. The AISYSCON automates the functions that a signal command system control currently performs manually: network planning and engineering, wide area network management, signal command and control, battlefield spectrum management and communications security management.

**Army Special Operations Command Network (ASOCNet).** Provides SOF command and control.

**Army Tactical Command And Control System (ATCCS).** ATCCS comprises all facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned forces. The ATCCS will integrate five battlefield functional areas: 1) maneuver control; 2) intelligence and electronic warfare; 3) fire support; 4) forward area air defense; and 5) combat service support. It will use common hardware and software to permit horizontal as well as vertical flow of data across the five battlefield functional areas. As a part of the ATCCS, the Advanced Field Artillery Tactical Data System (AFATDS) will be the future fire control C2 system. The Forward Area Air Defense Command/Control and Intelligence System (FAADC2I) is the part of ATCCS that integrates all forward areas' air defenses against enemy aircraft and airspace management. The All Source Analysis System (AS) is the Army's computer-based battlefield intelligence system which fuses intelligence information to support decision making. The Combat Service Support Control System (CSSCS) will provide combat support information essential for planning and supporting decision making by tactical commanders. The five systems will interface with one another by three communications systems, the Combat Net Radio, the Army Data Distribution System, and the Area Common User System.

**Army World Wide Command and Control System (WWMCCS) Information System (AWIS).** AWIS fulfills the Army's Strategic Command and Control (C2) requirement for software, hardware, and databases for the implementation of the Joint Operations Planning and Execution System (JOPES) and other joint service systems that support the Commanders-In-Chief (CINCs) and Joint Chiefs of Staff (JCS). In addition, AWIS modernizes the Army's C2 system supporting conventional military planning and execution. Applications programs developed by AWIS, STACCS, and CSSCS (EAC) will provide the building blocks for the Army Global Command and Control System (AGCCS).

**ASSC Communications Upgrade.** The ASSC Communications Upgrade will provide dedicated digital data and secure voice connectivity between worldwide space surveillance sensors and the ASSC. It will also upgrade the ASSC communications processors.

**Asset Tracking Logistics and Supply System (ATLASS).** A supply and equipment management system in support of the MAGTF Commander. ATLASS can be used in garrison or deployed; providing sustainment support to the MAGTF during deployment using material requisitions passed to the source of supply. On-hand assets and replenishment status can be tracked at various echelons, providing accurate logistics posture as an operation evolves.

**Asset Tracking Logistics and Supply System II (ATLASS II).** A fully deployable system providing integrated field supply and maintenance support to the Fleet Marine Forces. ATLASS II expands on both the functionality and technical capabilities of its predecessor, ATLASS. ATLASS II enhances the performance of logistics operations and provides the commander full visibility and accountability of assets under his control.

**Asynchronous Transfer Mode (ATM).** The ATM is a method of packetizing digital information by using a fixed cell construction which is independent of data rate and cell switching technology. In ATM, information is divided into short fixed-length entities, called cells, which are provided with flow identification labels, and forward through the network in a way similar to packet multiplexing/switching. It works in conjunction with SONET to permits a very wide range of data rates and services to be collectively integrated and switched within a very high data rate network. ATM cells can also be passed over circuit-switched networks as normal digital traffic.

**Automated Message Handling System (AMHS).** A combination of hardware and software components that automate the processing and management of messages from origination to destination (writer to reader). These components are used to shield the user from the technical complexities of messaging.

**Automated Patient Evacuation System (APES).** APES is the AMC automated aeromedical airlift scheduling system. It automates the processes involved in transporting patients to medical treatment facilities worldwide. APES includes automated patient manifesting, itinerary and mission planning, management reporting and inter-agency communication. It interfaces with the Defense Medical Regulating Information System.

**Automatic Digital Network (AUTODIN).** AUTODIN is a common-user switched message service. It is a principal long-haul, DOD digital network for transmitting message traffic on an automated store and forward basis between switching centers and among a wide variety of fixed or transportable subscriber terminals. The system is designed around remote, interconnected, central processing nodes called AUTODIN Switching Centers (ASC). The ASC also provides the interface for dissimilar terminals to communicate with each other by virtue of code, format, and line speed conversion. Plans call for the AUTODIN to be phased down beginning about the year 2001 and be gradually replaced by a new architecture call the Defense Message System (DMS)

**Automatic Identification Program (AUTO ID).** The AUTO ID is intended to be a means for rapid, accurate identification of aircraft traffic. It uses Identification, Friend or Foe (IFF) and flight-corridor information. Future sensors, including the IFF and aircraft jet engine signature modulation, will be integrated into the equipment.

**Automatic Secure Voice Communications Network (AUTOSEVOCOM).** AUTOSEVOCOM provided common user secure voice services since the early 1960s. The system has been replaced by the Red Switch network.

**Automatic Voice Network (AUTOVON).** AUTOVON is the switched voice system which preceded the current DSN.

**Base Information Transfer System (BITS).** The BITS is a Local Area Network resident on a base or post used to disseminate, retrieve information, and manage information flow at that location. The base has access to global information through appropriate switches and routers which couple into long-haul connectivity

**BCE Automated Support System (BASS).** BASS is an Army developed program to allow Battlefield Coordination Element (BCE) personnel in the Modular Air Operations Center (MAOC) to enter target nominations and receive Air Tasking Orders (ATO) information dealing with sorties planned against targets nominated by the Army.

**BGPHERS Surface Terminal (BGPHERS-ST).** The downsized AN/SLQ-50(XN-1) is the CV/CVN-based Surface Terminal for the BGPHERS. Sensor data from the remoted BGPHERS airborne package installed aboard ES-3As and various interservice aircraft is relayed to the ship via the Common High Bandwidth Data Link (CHBDL). The downsized AN/SLQ-50(XN-1) dynamically controls the airborne package, enabling shipboard operators to conduct signals search, analysis, and reporting. Outputs are routed to the BG commander via ACDS and Tactical Intelligence Information Exchange Subsystem (TACINTEL).

**Broadband Integrated Services Digital Network (BISDN).** The BISDN (which incorporates SNET/ATM technology) is a very high data rate network which is the core of the Objective DII Architecture. Conceptually, the BISDN is no more than an extension of the ISDN to accommodate broadband services. However, in implementation the BISDN uses a mode of transmission that is completely different from the ISDN because of the sheer diversity of services. To accommodate various characteristics and distribution properties of broadband service data, Asynchronous Transport Mode (ATM) technology is employed. It achieves packet-oriented integration of broadband services, and hence has a fundamental difference from that of the ISDN, whose service integration is circuit oriented.

**C4I for the Warrior.** C4I for the Warrior is a concept that brings to the warrior in standard format: accurate and complete pictures of their battle space; timely and detailed mission objectives; and clear views of their targets. The C4I For The Warrior envisions an information infrastructure which provides for: Seamless operations; Complete interoperability; Common Operating Environment; Flexible, Modular C4I Packages tailored to the Warrior's needs; Horizontal and vertical C2; Over-the-air Updating; Warrior Pull on Demand; Real-Time Decision Aiding; Global Resource Command and Control; Adaptive Safeguards; and Visualization.

**Canadian Coastal Radar System (CCRS).** The CCRS provides surveillance across the East and West portions of Canada for detection and tracking of inbound atmospheric threat vehicles and for the direction of interceptor engagements. The network also supports peacetime Canadian airspace control.

**CANEWARE.** CANEWARE is an in-line encryption system for host computers designed to work in an x.25 switched wide area network (WAN) environment. It meets Secure Data Network System (SDNS) standards. CANEWARE uses FIREFLY key management.

**Cargo Movement Operations System (CMOS).** CMOS is the Air Force's response to the JCS requirement for the Transportation Coordinator's Automated Information Movement System (TCAIMS). TCAIMS is the generic term for the hardware, software, procedures, and other systems that provide integration of the movement information used in the force deployment process from base level to National Command Authority (NCA) level. The Air Force CMOS program is meeting the TCAIMS mandate by automating base-level wartime and peacetime transportation processes to exploit improved efficiency and provide In Transit Visibility (ITV) over cargo moving in the National Defense Transportation System (NDTS).

**CAVALIER RADAR.** The Cavalier Radar, previously referred to as the Perimeter Acquisition Radar Attack Characterization System (PARCS), provides Tactical Warning and Attack Assessment (TW/AA) of SLBM attacks against the CONUS and southern Canada originating from the near-Arctic areas behind BMEWS coverage. The Cavalier Radar will also provide TW/AA characterization of ICBMs that enter its coverage from Asia. The secondary mission of the Cavalier Radar is to provide space object identification (SOI) as a collateral sensor of the Space Surveillance Network (SSN).

**Central American Regional Communications Network (CARCN).** Provide a communications network to support US forces, Defense Attaches and Military Groups in Honduras and other Central American countries. Extends DCS into Honduras and provides inter-theater connectivity. Will consist of leased commercial assets and replaces tactical Army communications equipment and personnel deployed to Honduras

**Cheyenne Mountain Upgrades (CMU).** A collection of six programs designed to enhance overall Integrated Tactical Warning/Attack Assessment (TW/AA) These programs are : Command Center Processing and Display System Replacement (CCPDS-R), Communications System Segment Replacement (CSSR), Space Defense Operations Center 4 (SPADOC 4), Survivable Communications Integration System (SCIS), Granite Sentry, Alternate Processing and Correlation Center (APCC).

**CINC's Mobile Alternate Headquarters (CMAH).** A ground mobile C2 system designed to deploy prior to hostilities, direct strategic forces during a war as required and reconstitute those forces. Its communications and planning capabilities exceed those of any airborne platform and its survivability and endurance exceeds that of other command centers.

**Civilian Vulnerability Indicator Code (CIVIC).** CIVIC is a mathematical model portraying nuclear blast and fallout effects on specified targets using specified weapons. CIVIC is a post-SIOP analysis and war gaming program which assesses

damage caused by any attack option. Analysis capabilities include fatality and casualty analysis, damage to installations and fallout doses at monitor points.

**CLASSIC CENTERBOARD.** CLASSIC CENTERBOARD will provide BULLSEYE with a state-of-the-art database management capability. To manage these sophisticated database capabilities effectively, BULLSEYE will operate as a centralized command and control structure by consolidating the two area net controls in to a single net control located at NCTAMS EASTPAC. Operations will be structured to ensure requirements of all theater commanders are expeditiously and independently addressed. This will be accomplished by ensuring that one or more general purpose workstations are on-line at all times to respond to individual theater requirements as they occur. The BULLSEYE Support Center (BSC) located at Naval Security Group Activity (NSGA) Northwest, Chesapeake, VA, will be responsible for quality assurance and performance analysis of worldwide system performance and for hardware and software standardization. The BSC will provide dedicated resources to optimize overall system performance. To provide this support, the BSC will continuously monitor "on-line" feedback to the net control station (NCS) and outstations when performance is outside established thresholds. The BSC will also perform long-term analysis, including the examination of "performance trends" that will result in "non" real-time, long-term support. The BSC will have the same functional capabilities as the NCS and will execute BULLSEYE DF assignment, fix, and report functions against traditional "accuracy study" and other targets to verify and enhance system performance. A significant enhancement to current BULLSEYE capability is the fact that any CENTERBOARD-equipped outstation can, in addition to DF and acquisition, perform the coordination, fix, and report roles, as assigned on an event-by-event basis. Current plans call for installation of CENTERBOARD general purpose workstations at five outstations. The BSC will be capable of assuming net control, but without the full capability to perform system-wide quality assurance and performance monitoring.

**CLASSIC FLAGHOIST.** FLAGHOIST is a communications processor that provides the interface for the sensor systems of the BULLSEYE HFDF system with HFDF NCS via a high-speed Packet Switched Network (PSN). FLAGHOIST replaces existing low-speed communications processors. FLAGHOIST replaces the Outstation Processing Equipment Group (OPEG) located at BULLSEYE net outstations and the Buffer Processor Unit (BPU) located at NCSs with new communications host processors. Each host processor interfaces with the PSN using two general purpose ports connected to an Interface Message Processor (IMP) using X.25 protocols. The FLAGHOIST test configuration consists of the Net Control Communications Subsystem (NCCS), Outstation Communications Subsystem (OCS), and associated peripheral devices. The NCCS is the communications processor that receives, processes, monitors, historically logs, and routes messages between the communications processor (CP)/GYK-3 outstation, and site-selected communication users over the BULLSEYE Communication System (BCS) PSN. The OCS is the communications processor that receives,

processes, monitors, historically logs, and routes messages between the high frequency sensor system, site-selected communication users, and the BCS PSN.

**Collection Requirements Management Application (CRMA).** CRMA (formerly the Collection Management Support Tool (CMST)) was adopted as the DOD collection management support. CRMA provides all-source collection management support, both in assessing capabilities of collection systems, and in generation and monitoring results to collection tasking requests. In addition, CRMA will consolidate other collection management ADP functions, such as performed by the Advanced Imagery Requirements and Exploitation System (AIRES), thus reducing training and hardware maintenance costs. CRMA full operational capability (FOC) is planned for late 1994.

**Combat Area Support Terminal (COAST).** COAST is a joint Navy/Air Force project which will be a shore version of the Prototype Analyst Work Station (PAWS), a SIGINT specialized version of the POST. COAST will provide additional map features and land characteristics of land targets that are not available in POST. Ninety percent of COAST requirements will be met by PAWS.

**Combat DF.** The objective of Combat DF is to provide surface ships with an acquisition, direction finding, and recognition capability against hostile command, control, and communications (C3) signals that will allow the afloat commander to exploit the communications signals of hostile forces to detect and localize the threat. Combat DF satisfies a Chief of Naval Operations (CNO) Operational Requirement (OR) to develop, for smaller naval combatant ships, an integral capability to detect, classify, and locate surface and air threats and to assist in their prosecution. The COMBAT DF System (AN/SRS-1) consists of hardware, software, and firmware that provides a passive-sensor capability to detect and locate hostile targets at long-range and to input this information into the ship's TDS. The design of COMBAT DF is based on the proven technology of OUTBOARD but provides greater flexibility and responsiveness in signal acquisition while reducing space and manning requirements. Combat DF; will be installed aboard LHDs and selected DDG 51 units.

**Combat Intelligence System (CIS).** Provides force-level and unit-level ops/intel with a standards based ADP capability to support targeting, air operations plan development, ATO target development, situation awareness, threat assessment, mission planning support, battle damage assessment, reporting, and battle staff briefings. CIS provides intelligence data interface to JIC/J2, D/JTF, and weapons systems. CIS is based upon and will provide the functionality of the Intelligence Correlation Module (ICM), Sentinel Byte (SB), Constant Source (CS), and Rapid Application of Air Power (RAAP).

**Combat Net Radio (CNR).** The CNR is a ruggedized tactical radio used by the warrior on the battlefield. It has anti-jam and encryption capability to help provide information assurance. It can be used in conjunction with Mobile Subscriber Equipment to provide robust tactical connectivity.

**Combat Operations Intelligence Center (COIC).** The COIC is the intelligence nerve center for the JTF. The COIC receives, assimilates, processes, evaluates and disseminates intelligence information in support of the operational forces. COICs in one form or another are normally located at each of the CINC Command Centers.

**Combat Personnel Control System (CPCS).** CPCS provides automated support to deployed USAFE commanders with accurate strength accounting during exercises, contingency and wartime operations. It is a personal computer based system with interfaces into AUTODIN.)

**Combat Service Support Control System (CSSCS).** CSSCS is one of five Battlefield Functional Area (BFA) control systems which make up the ATCCS. CSSCS provides CSS commanders with automated C2 support and a functional interface between the ATCCS and the Army's CSS Standard Army Management Information System (STAMIS) in order that the state of readiness can be assessed and the ability to deploy can be evaluated in near real-time. CSSCS will share four BFAs (Maneuver Control, Air Defense, Fire Support, and Intelligence/Electronic Warfare). CSSCS will be deployed from echelons above corps (EAC), divisions, maneuver brigades/combat brigades to separate/armored cavalry regiments.

**Combat Terrain Information System (CTIS).** CTIS (in this package) refers to the integration of the Digital Topographic Support System (DTSS) and the Quick Reaction Multicolor Printer (QRMP) programs. CTIS, a low density system, employs the ACOE to the maximum extent possible. CTIS receives IMETS weather products, Defense Mapping Agency and available enemy map data, databases this information, and provides current map overlays and terrain and mobility analyses as either digital or paper copy products. CTIS provides extremely rapid color paper products of the map/terrain output. All products are available worldwide since the CTIS capability is fielded in standard Army shelters and is C-130 capable. There are no plans to migrate CTIS into another system.

**Combined Mating and Ranging Planning System (CMARPS).** CMARPS is AMC's system for planning movements of deploying tanker and receiver aircraft to provide the most efficient refueling profile. It supports the Deliberate Planning process.

**Combo (Combination) Radio.** The Combo Radio, AN/ARC-210, provides antijam (AJ) (voice) communications over the UHF and VHF frequency spectrum using a single radio. Its primary application is for AAW and close air support (CAS) operations and will be installed in the F/A-18 first, then in the AV-8B, F-14D, E-2C, EA-6B, AH-1, CH-53, UH-1N, OV-10, and the EP-3. It promotes interoperability with Department of Defense (DOD)/allied HAVE QUICK II and

VHF Single Channel Ground Air Radio System (SINGARS) communications systems. Both the Navy and Air Force plan to use it as their primary VHF AJ system.

**Command and Control Information Processing System (C2IPS).** The C2IPS deployable version will evolve, along with the fixed-site C2IPS version to achieve total system interoperability transparent to the deployed functional users. Initial C2IPS functional capabilities and software will be fielded in four increments, with a major release scheduled once each year through the end of 1996. For initial deployment capability, AMC is pursuing a scaled-down, 'node in a box' version of C2IPS. The node in a box integrates the communications processor, file server, and workstation functions into a single terminal. C2IPS software for deployable systems will be fielded in the same four increments discussed above for wing/base-level C2 systems.

**Command and Control Processor (C2P).** The C2P project uses non-developmental item (NDI) acquisition of standard Navy computers (AN/UYSK-43) and develops software programs to interface between tactical and digital communication systems and selected shipboard processors. The processor will provide translation between TADILs A, C, and J and isolate all tactical data link communications equipment, message standards, and protocols from tactical information processors. This will provide a flexible capability for rapidly exchanging tactical information using a single universal database for translating various link formats while remaining completely independent of communications equipment and tactical data computing systems.

**Command Center Improvement Program (CCIP).** The CCIP will upgrade the USSOCOM Command Center to automate the reporting of force readiness and communications status. The CCIP will allow USCINCSOC immediate access to up-to-date information on all assigned forces to include readiness and deployments. In addition, information on communications status will extend to the SF battalion/SEAL level. The basis for this program is the JCS MROC of 2 April 91 which addresses the common framework for resolving operational deficiencies that exist in fixed command centers.

**Command Center Processing and Display System-Replacement (CCPDS-R).** A real-time missile warning system for strategic force management, force survivability analysis, and force status monitoring. The CCPDS-R will provide increased capacity and more efficient processing and display of information on ballistic missile attacks and nuclear detonations (NUDETs).

**Commanders in Chief Network (CINCNET).** Command, control, and communications system designed to provide force location data, intelligence information, weather, unit readiness, satellite data, and data from other sources. This system is supported by the Joint Visually Integrated Display System (JVIDS) software application.

**Command Tactical Information System (CTIS).** To present near real-time joint information covering all echelons and components for decision making, planning, and support activities at force and unit levels. This is an ALCOM program to handle joint data.

**Commander's Tactical Terminal (CTT).** The CTT is a secure intelligence reporting device that includes airborne relay equipment installed in the GUARDRAIL (GR)/Common Sensor(CS) and U-2R platforms, ground terminals, and a security data system. CTT is deployed at the Corps, Division, Brigade, and EAC levels. It is a component of the GR/CS system and will replace the obsolete reporting devices used on the earlier variants of GUARDRAIL. CTT sends perishable intelligence reports from GR/CS and the U-2R to remote ground locations and allows field users to request and receive information from GR/CS and the U-2R. CTT has AJ and automatic retransmission capabilities and is a key link in the air/land battle future. To prevent proliferation of multiple non-standard dissemination devices in the force structure, CTT is being upgraded to incorporate the capability to operate in the Tactical Receive Equipment and Related Applications (TRAP), and the Tactical Data Information Exchange Subsystem. B (TADIXS-B) networks. A receive-only version of the upgrade will be fielded to support those users with operational, weight and/or power limitations. In addition, a three channel program upgrade is underway with multiservice commonality and interoperability.

**Commercial Satellite Communications Initiative (CSCI).** CSCI is a congressionally mandated program to build a commercial architecture to support short and long term communications requirements in a responsive and cost effective manner. It will provide a private worldwide DOD network of leased commercial transponders used to augment the military satellite capabilities of DOD.

**Common Airborne Launch Control System (CALCS).** CALCS is a system to improve retargeting strategic missiles and provide improved force management capabilities. This program was originally intended for both Minuteman and Peacekeeper systems, but budgetary constraints have limited capabilities for the Minuteman system to downlink commands only. CALCS provides the following capabilities relative to the Peacekeeper system: link to ABNCP aircraft on the status of missiles, ABNCP down link to missile systems allowing retargeting actions and launch, improved EMP hardening, and more reliable/maintainable system hardware.

**Common User Digital Information Exchange System (CUDIXS).** CUDIXS is the Navy's high-speed message handling system automating both ends of a ship/shore link or a ship termination. The shore end of CUDIXS is the Naval Communications Processing and Routing System (NAVCOMPARS) while the shipboard end is the Navy Modular Automatic Communications system (NAVMACS). Using an automatic polling scheme, each CUDIXS can serve up to 60 ships at 2400 tips via UHF SATCOM.

**Communication Support Processor (CSP).** The CSP interfaces with AUTODIN to control reception and transmission of message traffic. The CSP accepts two types of messages: General Services (GENSER) and Sensitive Compartmented Information (SCI). CSP is a store and forward processor capable of serving as a front-end processor to different computer systems and will be the heart of the IDHS-95 communication segment. The communications server connected to the CSP has a direct link with the MSDB/IDB and MIIDS/IDB, specifically IDHS-90. A communications server to handle Special Classified message traffic is connected to the backbone network (or SINET) with an interface to MSDB/IDB. Additionally, a Message Analysis Server for CSP data and Press traffic and the MAXI for message traffic are connected to SINET. All messages received or transmitted by the CSP undergo a security check and format validation. MAXI is used for message preparation and release.

**Communications Operations Integrated System (COINS ADA).** Ada-COINS is an Air Mobility Command (AMC) unique, multi-user, on-line information system that is used to prepare contracts for Airlift Industrial Services Fund (ASIF) and Non-ASIF funded commercial airlift. This system augments Air Mobility Command's airlift mission requirements to account for all money paid to the commercial air carriers.

**Communications Support System (CSS).** CSS will increase Navy warfighting capability by providing communications capabilities of increased throughput, security, survivability of communication connectivity in a stressed environment, and provide greater responsiveness to user requirements. These significant improvements will be achieved through integration of previously-dedicated systems into one flexible, dynamically-allocable, multimedia communications service. The multimedia architecture will provide users flexible access to all communications links. Radio frequency (RF) links will be treated as common resources, interfaced through a multinet controller. CSS will provide the systems engineering and integration at the equipment and system level for all CSS communication system elements. This project is a systems engineering effort required to define detailed CSS architecture; develop standards for functional protocols and system interfaces; develop system and subsystem specifications; select common hardware and software approaches, prototype and test system components; and integrate systems both in development and procurement. Major elements of the CSS architecture will be developed incrementally through the following primary contributing programs: EHF SATCOM, UFO, UHF SATCOM (Miniature DAMA/Automatic DAMA (Mini-DAMA/auto-DAMA), TACINTEL II), JTIDS/C2P, Naval Modular Automated Communications system (NAVMACS), and the High Speed Fleet Broadcast (HSFB).

**Composite Health Care System (CHCS).** CHCS is the standard hospital information system for United States (US) worldwide military health care. It connects and integrates all departments, wards and outlying clinics for over 700 health care facilities. CHCS supports administrative, clinical, and financial functions such as clinic patient administration, patient

scheduling, patient/bed management, patient accounting, transmitting, and tracking orders for laboratory, tests, examinations, radiology, and pharmacy results.

**Computer Aided Embarkation Management System (CAEMS).** An interactive database/graphics tool for producing amphibious, Maritime Prepositioning Force (MPF), and Military Sealift Command (MSC) ship load plans and associated reports.

**Computer Aided Load Manifesting System (CALM).** Computer Aided Load Manifesting (CALMS) is a microcomputer system designed to automate the load planning of military cargo aircraft. It provides a standard automated capability to store and edit information on air cargo increments. It also allows the user to pre-plan aircraft cargo loads that are used in peacetime as well as during times of war.

**Computerized Deployment System (CODES).** CODES assists in the pre-stow process to accelerate loading of ships, optimize the use of sea lift cargo space and rapidly reconfigure loads for unit deployment when necessary.

**Computerized Movement Planning and Status System (COMPASS).** COMPASS prepares US Army unit movement data for inclusion in Operation Plans Consolidated Aerial Port Subsystem II (CAPS II). CAPS II will be AMC's real-time, minicomputer system used at the APOEs to carryout local cargo, mail, and passenger processing functions. It will replace ADAM III (cargo shipment), the Passenger Automated Check-In System (passenger tracking), and the Remote Consolidated Aerial Port Subsystem (CAPS).

**Consolidated Aerial Port Systems II (CAPS II).** The Consolidated Aerial Port Systems II (CAPS II) Program will integrate aerial port cargo and passenger processing, and aerial port C2 functions into an integrated, client-server based system residing on Open Systems hardware. This program will also develop interfaces to all Transportation Coordinators-Automated Information Management Systems (TC-AIMS) used by all services for airlift. The Consolidated Aerial Port Systems II (CAPS II) Program will integrate aerial port cargo and passenger processing, and aerial port C2 functions into an integrated, client-server based system residing on Open Systems hardware. This program will also develop interfaces to all Transportation Coordinators-Automated Information Management Systems (TC-AIMS) used by all services for airlift.

**Constant Web Follow-on (C2W).** Formerly the Constant Web database, the C2W XIDB systems support the development and distribution of the Air Force portion of the command control warfare (C2W) portion of the XIDB. The system is used to develop the automated intelligence tools used by intelligence analysts in the AFIWC to populate, maintain, and exploit raw command, control, and communications intelligence (C3I) data. Also will be used by the intelligence analysts at the AFIWC to populate the C2W/XIDB database to support employment of weapons systems. Theater battle managers and strategic planners can use this tool for electronic jamming, targeting, and mission planning activities.

**Continental United States Freight Management (CFM).** CFM provides Military Traffic Management Command (MTMC) with a comprehensive, automated freight traffic management capability for a cost efficient and effective means for Department of Defense (DOD) activities to procure commercial carrier transportation services and pre-audit bills of lading using electronic data interfaces among shippers, carriers, and finance centers.

**Contingency Architecture Model for Planning (CAMP).** The CAMP is an interactive software tool which will enable CINCs and Services to conduct contingency communications planning and long range POM planning, from a single database. The CAMP will have significant applicability to C4 resource managers and long range integration planners.

**Contingency Intelligence Communications Systems (CICS).** The CICS provides contingency intelligence communications support to tactical commanders. There are several systems: a) Scalable Transportable Intelligence Communications System (STICS) is used to interface with national tactical systems; b) National Military Intelligence Support Team (NMIST) is a DIA crisis support element that provides direct all-source, fused national level intelligence to a tactical commander; c) Light Reaction Communication System (LRCS) is a quick reaction SCI contingency communications package developed by and for USCENTCOM; d) International Maritime Satellite Organization (INMARSAT) is a SATCOM commercial service used by USACOM for contingency voice and data intelligence communications; e) Joint Communications Support Element (JCSE) provides special communications equipment for contingency operations. The JSCE can be deployed in a variety of configurations.

**Contingency Operation/Mobility Planning and Execution System (COMPES).** COMPES captures, stores and reports Air Force deployment operations, logistics, and manpower data from base level through major commands to the Chairman of the Joint Chiefs of Staff (CJCS). It provides Air Force operation mobility planners with the capability to deal with detailed movement requirements at all levels and to summarize these detailed requirements into gross planning data.

**Contingency Tactical Air Control System (TACS) Automated Planning System (CTAPS).** CTAPS provides automated exchange, processing, and display of friendly and enemy tactical information. CTAPS supports planning, mission execution monitoring and reporting, as well as receipt and dissemination of Air Tasking Orders (ATOs), plans, schedules, intelligence, and weather data through a mix of existing fixed and deployable C4 capabilities. CTAPS has replaced Computer Assisted Force Management System (CAFMS) as the joint service USAF/USN ATO generation medium. Remote SUN Scalable Processor Architecture (SPARC) terminals will be installed in deploying CV/CVNs to support ATO distribution. This is an interim solution until the CTAPS functionality has been integrated into the NTCS-A. CTAPS is designed as a replacement and integration of existing ADP systems. CAFMS is an applications software package within CTAPS, as well as a graphics capability for air route planning. The CTAPS user terminal replaces the present CAFMS user terminal, and is capable of a maximum data rate of 9,600 BPS while users can also be supported

at lesser data rates. CTAPS is responding to the need for a survivable, interoperable, state-of-the-art replacement for the current ADP systems and is focusing in on simplicity, usability, and productivity. It is the USAF's ATO standard as well as an expansion of their ATO interoperability efforts among the services (to include the Army and the USMC) and allies. CTAPS is intended to play a role in the NATO ACCS.

**Conventional Mating and Ranging Planning System (CMARPS).** The Combined Mating and Ranging Planning System (CMARPS) is used by AMC's Tanker Airlift Control Center (TACC) to schedule the 8000+ air refueling missions flown by AMC, ACC, USAFE, PACAF, AFRES and Guard tankers. The "customers" for these tankers are over 12,000 aircraft from all branches of DOD and NATO worldwide. CMARPS is the group of programs including the Tanker Mating and Ranging Program (TMARP), the Combined Mating and Ranging Program (CMARP) and Graphics Support Interactive Control System (GSICS). CMARP determines if the reconnaissance mission aircraft profile is feasible and how many tankers are required for refueling. GSICS is a single sortie aircraft mission package that can be used to manipulate input data for CMARP/TMARPs and will provide a map-based visual presentation of the run results.

**Copernicus Architecture.** The Navy's command, control, communications, computers, and intelligence (C4I) architecture for the post-Cold War era. The Navy is developing a new C4I structure for the next century. Known as the Copernicus Architecture, this comprehensive restructuring will use today's C3I baseline systems as the foundation from which to launch into the C4I technology of tomorrow. Currently in the conceptual stage of its design, the Copernicus Architecture will take approximately a decade to complete. In the Copernicus world, the tactical commander is the center for controlling information flow to support his mission execution. This user centered approach provides the tactical commander control through information pull rather than producer push. Two key elements (pillars) of Copernicus are the CINC Command Complex (CCC) ashore and the Tactical Command Center (TCC) afloat. The other two pillars are GLOBIXs and TADIXs. a) The CCC provides a means to manage the information flow for the ashore tactical commander with sufficient doctrinal and technological flexibility to allow each commander to decide how much and what kind of information he wants. b) The TCC is a generic term for the decision centers of afloat war fighting commanders. The TCC is linked to the CCC by a TADIXS, Tactical Data Information Exchange System. c) GLOBIXs are global, virtual networks imposed on the DCS or commercial systems which tie command and staff organizations in the CCC to joint and/or combined shore sensor and analytic nodes and to other selected communities. d) TADIXSs also link the afloat commander with units under his command and with wide area sensors managed ashore that are not routed through the CCC, and link component commanders to the JTF commander.

**Corporate Information Management (CIM).** CIM will review layers of policies and management within several functional areas that overlay information systems. As such, CIM's impact will not necessarily be restricted to information systems, but on a larger

scale, how DOD does business. A key element of CIM is the implementation of a computing and communications infrastructure supporting portability, scalability, and interoperability of applications. ASD (C3I) is taking steps to execute the approved implementation plan. These steps include: a) Establishment of a new Center for Information Management within the Defense Information Systems Agency (DISA). b) Oversight to ensure the effective and efficient development, acquisition, and operation of all ADP in DOD. c) Establishment of a DOD Information Policy Council to exchange information management concepts and plans and to provide a forum for the full range of views on achieving the goals of CIM. d) Establishment of an Information Technology Policy Board, chaired by the Director of Defense Information. CIM applies to all Functional Areas including C4I. Current functional groups consisting of OSD officials, Service representatives, and Defense agency functional experts will define current and future business processes. Where cost effective, these groups will develop new DOD systems for Civilian Pay, Civilian Personnel, Contract Payment, Distribution Centers, Financial Operations, Government Furnished Property, Material Management, and Medical Activities.

**Corps of Engineers Automated Processing (CEAP).** CEAP is a subset of the DISN-NT consolidation effort. It is a CONUS-wide Army Corps of Engineers network consisting of 16 nodes, connected by T-1 trunking. The network uses leased facilities for its long-haul connectivity.

**Counter Narcotics/Command Management Control System (CN/CMS).** CN/CMS, a joint DOD/DEA/DOJ program, provides computer and secure voice functionality to DOD, DEA, DOJ and other special users at DOD, DOS, and law enforcement agencies in CONUS and OCONUS in support of counter-narcotics operations. The Army is the executive agent for this system; PEO CCS is the Army implementor. Up to 40 sites in 16 countries (to include US) are planned to be completely installed and fully operational by 30 September 1995. There is no migration plan for the CN/CMS, although the system employs the Army Common Operating Environment to the maximum extent possible. CN/CMS will be the target system.

**Cover and Deception System (CADS).** CADS provides a ship or battlefield deployable, modularized, communications system capable of supporting C3 countermeasures (C3CM) and operational deception by mimicking own force or opposing force communications, or by impeding enemy use of the electromagnetic spectrum by the use of intrusion or jamming techniques. The CADS function must be adaptable to the full spectrum of host platforms and a wide variety of operational environments. To meet this requirement, the system must be modularized.

**Crisis Action Team Aircraft/Aircrew Report (CATREP).** CATREP provides current information to Headquarters AMC and the Numbered Air Force Crisis Action Teams on the commitment and availability of unit aircraft and crews at base station Crisis Management Subsystem (CMSS). CMSS will provide crisis/contingency planning, decision-making and execution management for Military Sealift Command (MSC).

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**Critical Intelligence Communications (CRITICOMM).** CRITICOMM facilities are managed by NSA and operated and maintained by the military departments. Its principal function is the transmission and delivery of CRITIC message traffic. A CRITIC is a message containing critical information concerning foreign situations of developments which affect the security or national interests of the US. The secondary function is to support the SCI traffic requirements of the intelligence community as part of the Defense Special Security Communications System (DSSCS). CRITICOM terminals can communicate with SPINTCOMM network on a worldwide basis.

**Data Administration (DATA ADMIN).** Data administration is the command program charged with management and control of AMC data as a corporate asset to promote interoperability of AMC systems and effective data sharing across those systems. The AMC-Data Repository uses the COTS product Open Repository developed by the InfoSpan corporation. Open Repository is the only FIPS 156 compliant repository that is commercially available.

**Defense Automated Warning System (DAWS).** DAWS is an Intelligence Operations Center automated support tool designed to help the watch stander perform faster and more reliably.

**Defense Automatic Addressing System (DAAS).** DAAS, a Defense Logistics Agency system, routes and records Military Standard Requisition and Issue Procedures transactions between the retail and wholesale supply activities within the wholesale supply activities and Military Standard Transportation and Movement Procedures transportation transactions.

**Defense Commercial Telecommunications Network (DCTN).** The purpose of the DCTN is to provide leased switched voice, data, and video teleconferencing throughout the US. The network is managed by DISA, currently serves over 250 locations, and is designed to minimize costs. It is evolving as an integral element of the Defense Switched Network (DSN).

**Defense Communications System (DCS).** The DCS is a worldwide transmission system comprised of US-government owned and operated communications facilities and circuits leased from commercial telecommunications carriers. The government owned portion includes all long-haul assets of the Army, Navy, and Air Force except those devoted to tactical communications. The types of transmission media include LOS radio, over-the-horizon (OTH) tropospheric scatter radio, HF radio, satellites, and cable. Most government owned facilities are located outside the US. The DCS transmission system interconnects common user switched networks of the DCS (DMS/AUTODIN, DSN/AUTOVON, and DDN) and provides full period dedicated circuits to support command and control requirements between the National Command Authority (NCA), the Joint Chiefs of Staff (JCS), and Unified and Specified commands. Other government agencies are provided service when spare capacity exists. The DCS provides high capacity, high quality, reliable, and

secure circuits capable of handling all modes of service for the user, with transmission rates of 64 kbps for voice and up to 512 kbps for data. Typically, two or more gateways provide worldwide access from each theater. Wide band transmission systems provide multi-channel capacities ranging from 24 to 576 channels. DCS interconnect/access points are provided to all or most major headquarters and bases and to tactical forces down to and including corps/wing echelon. Ground Mobile Forces (GMF) access the DCS through Echelons Above Corps Communications (EAC COMM) equipment which connects to the DCS via terrestrial interfaces or DCS HF entry stations or through Ground Mobile Forces Satellite Communications (GMFSC) satellite links which down link to GMF gateways at selected Defense Satellite Communications System (DSCS) earth stations worldwide.

**Defense Communications System (DCS) High Frequency (HF) Entry Stations.** The DCS HF entry stations are eleven Service operated HF communications stations worldwide designated and equipped for interfacing tactical HF systems into the DCS. DCS HF Entry Stations serving the USEUCOM AOR are: Naval Telecommunications and Computers Station (NTCS) Norfolk, VA; Andrews AFB, MD; MacDill AFB, FL; Croughton, UK; Incirlik AB, TK; Rota, SP; and Pirmasens, GE. The DCS HF Entry Station Improvement Program adds the HF Standard Entry Modem and HF/AUTODIN Interface Device and adds 1 to 3 trunks to eleven existing stations (from 2 each). It also adds six new fixed stations: Thurso, Sigonella, Diego Garcia, Ascension Island, Puerto Rico, and Guam.

**Defense Communications System (DCS) Mediterranean Improvement Program (DMIP).** The DMIP provides enhanced DCS support within the Mediterranean area. DMIP Phase I in the eastern Mediterranean, configured commercial connectivity in Turkey. DMIP was considered complete in January 1993. DMIP Phase II has been renamed the DCS Spain/Italy Reconfiguration (DSIR).

**Defense Communications System (DCS) Spain/Italy Reconfiguration (DSIR).** DSIR is the follow on to the DCS Mediterranean Improvement Program (DMIP). For Spain and Italy, DSIR includes installation of integrated digital network exchange (IDNX) modems, upgrades of current IDNX multiplexers, leased service activations, DSCS link activations, and US Government owned terrestrial links with IDNX activations.

**Defense Data Network (DDN).** The DDN is a wide-area network that provides long-haul data communications service for DOD authorized users. The network is currently segmented into the unclassified MILNET and three classified networks: DSNET1 for Secret-level traffic; DSNET 2 for Top Secret-level traffic; and DSNET3 for TS/SCI-level traffic. Through implementation of BLACKER Host-to-host encryption technology. The DDN provides the DOD with a survivable and secure, worldwide packet-switching service for critical data (query/response, interactive, and bulk) communications. DDN satisfies the long-haul communications needs of the DOD data communications users, provides integral support to mission essential C2, and also serves DOD intelligence, logistical, operational, and administrative requirements. The

DDN will enhance the connectivity of all subscribers attached to the system, including WWMCCS Information Network (WIN), DOD Intelligence Information System (DODIIS), Defense Message System (DMS), and other systems currently using a dedicated backbone or AUTODIN. All DDN requirements are planned to be merged into the Defense Information Systems Network (DISN) in FY96.

**Defense Information Infrastructure (DII).** The DII is that of a seamless, global, standards based end-to-end architecture that provides assured, flexible and affordable information services to the warrior. The DII encompasses information transfer and processing resources, including information and data storage, manipulation, retrieval, and display. More specifically, the DII is the shared or interconnected system of computers, communications, data, applications, security, people, training and other support structure, serving the DOD's local and worldwide information needs.

**Defense Information Systems Network (DISN).** When fully implemented, DISN will combine the former Defense Communications System (DCS) networks of the existing DDN, and the Defense Switched Network (DSN) with the Defense Message System (DMS), as well as leased commercial connectivity into a new, common- user multi-media network. The DDN and DSN were established separately to perform different functions, such as transferring data between computer terminals and providing telecommunications for the DOD. The new global network will combine computer data and voice networks, and incorporate communications satellites, microwave relay as well as ordinary communications trunking cables. The network will automatically route the traffic via the most efficient path, regardless of the medium, i.e., record message, voice, data, video, etc. The DISN is being managed by DISA.

**Defense Information System Security Program (DISSP).** The DISSP was initiated at the request of the ASD(C4I) with eight objectives which involve: Security policy; Architecture; Standards and protocols; Accreditation procedures; Technology; Transition planning; Organizational improvement; and Products and services availability. It is concerned with the transition of existing C4I systems, and in the development of new systems for the Defense Information System.

**Defense Integrated Secure Network (DISNET).** DISNET is the name given to the single, integrated network which will result from combining DSNET 1 (Secret level), DSNET 2 (Top Secret level), and DSNET 3 (SCI level) networks when multi-level security systems have been fully implemented. DISNET will ultimately be subsumed by DISN.

**Defense Logistics Agency Corporate Network (DCN).** The DCN is a subset of the DISN-NT consolidation effort. It is CONUS-wide network consisting of 55 nodes and is used for passing logistics administration traffic. Long-haul connectivity for the network is provided through leased facilities. A variety of element management systems are used to manage the network. The DCN is connected to the MILNET at 14 locations.

**Defense Medical Regulating Information System (DMRIS).** DMRIS is an automated system which aids in regulating patients into the hospital system. It automates hospital bed allocations based on bed availability, patient condition and diagnosis. The system is used to track requests for patient beds and inter-hospital transfer requirements requiring AMC airlift and to maintain clinical and demographic patient information. It will be integrated with APES and the Global Transportation Network.

**Defense Message System (DMS).** The DMS consists of all hardware, software, procedures, standards, facilities, and personnel used to exchange messages electronically between organizations and individuals in the DOD. The current subsystems of the DMS are the AUTODIN (including base level support systems) and electronic mail on the DOD Internet. The DMS also includes interfaces for tactical and allied systems, but does not include those systems. DMS will provide responsive and reliable exchange of messages electronically among organizations and individuals within the DOD, other Federal Government Agencies, and selected allied and foreign subscribers authorized by DOD. The current DMS consists of the organizational messaging service provided by AUTODIN and individual electronic mail messaging service (E-mail) provided via DDN. DMS will transition to messaging service based on international standards. When fully implemented, DMS will provide seamless writer-to-reader messaging service at a cost and staffing level that is significantly reduced as compared to today's services.

**Defense Meteorological Satellite Program (DMSP).** The DMSP provides an environmental satellite with sensors and support elements to collect and disseminate weather information, worldwide, to operational military service commanders. The DMSP Upgrade will receive weather satellite pictures from DMSP, METEOSAT, and NOAA satellites. The upgrade automates picture transmission over the Secondary Imagery Dissemination System (SIDS) circuits and eventually over the Automated Weather Distribution Service (AWDS).

**Defense Red Switch Network (DRSN).** The DRSN is a program to install and connect Red Voice switches at key command and communications nodal locations. The DRSN provides worldwide service, including conferencing and linking with other secure voice network users, to users at the National Military Command Center (NMCC), the NMCC Site R, and Unified command centers. Each Red Switch consists of a central PBX-type exchange that contains interfaces to numerous secure voice systems, including tactical systems. The switch provides connectivity for a community of "red" phones that send unencrypted signals over a shielded cable within a physically protected area for processing and encryption at the Red Switch. A dedicated T-1 carrier trunking network interconnects individual Red Switches which, in turn, can accommodate 32 kbps subscriber circuits. The DRSN is one component of the Secure Voice System (SVS) architecture.

**Defense Satellite Communication System (DSCS).** The DSCS provides the transmission backbone of high capacity command and control, intelligence and multichannel communications service. The DSCS provides critical connectivity for the NCA/JCS, Unified/Specified Commands, DOD Agencies, Department of State, and (by resource sharing agreements) the UK and NATO. The DSCS directly supports the Worldwide Military Command and Control System (WWMCCS) and Ground Mobile Force Satellite Communications (GMFSC) elements.

**Defense Simulation Internet (DSI).** The DSI is a communications network intended to support distributed simulations. DSI links organizations such as simulations centers, training facilities, defense laboratories, war fighting CINCs, and the Joint Staff. At maturity, DSI will facilitate multi-level, multi-CINC distributed exercises and war games. DSI is limited to fixed sites and is not intended as an operational C2 system. However, some of its capabilities, like video conferencing between CINCs and the Joint Staff, may be used to support war fighting operations. The DSI program is sponsored by the Defense Modeling and Simulations Office.

**Defense Switched Network (DSN).** The DSN will provide worldwide, state-of-the-art, cost effective, interbase telecommunications voice, data, and video service. It is designed to support critical users effectively during peacetime, crisis, and non-nuclear war, and to facilitate reconstruction of communications in a post-attack environment. The objective of the DSN is to evolve into the DISN, which will integrate voice, data, and video capabilities in a common user system to accommodate changing requirements, emerging technology, and improve pricing in the marketplace.

**DSN Remotely Programmable Conference Arranger (DRPCA).** The DRPCA, an all-digital modular conferencing bridge, allows AT&T to continue digitalization plans for network and special service equipment. Utilization of new digital products provide improved service through reduced maintenance requirements. The DRPCA conferencing bridges replaced the ARPCA analog bridges located at Williamstown, Kentucky and Lyons, Nebraska. The NMCC has two PCs that are connected to each respective conference bridge. The PC conference controllers allow the operator to configure DSN preset conferences and to monitor the status of conferences.

**Defense Transportation Tracking System (DTTS).** DTTS, a DOD system, is an automated data processing based system designed to track and monitor shipments in the Continental US (CONUS) from consignor to consignee with increased surveillance and security while in transit. It uses two-way digital communications and computer technology with commercial vehicles to track geographical locations and communicate with ammunition trucks in CONUS. DTTS tracks each CONUS truck shipment of Class I explosives. The trip start, in transit location, and trip end are recorded. DTTS is comprised of four segments: Data Entry Call-In, Computer Dial-In, Vehicle Call-In, and Satellite Tracking.

**Demand Assigned Multiple Access)/(Miniature Demand Assigned Multiple Access (DAMA/Mini-DAMA).** DAMA was developed to provide increased capacity and flexibility with the Navy's UHF SATCOM program. The UHF DAMA subsystem employs time division multiple access (TDMA) to multiple voice, Teletype (TTY), data, and various Fleet SATCOM automated information exchange subsystems onto a single UHF 25 kHz satellite channel. Mini-DAMA is the second phase of UHF DAMA development that will provide a miniaturized version of the system's multiplexer for installation in ships, submarines, aircraft, and portable shelters. Mini-DAMA equipment will perform the same functions as the UHF DAMA equipment, i.e., take several baseband signals, use TDMA techniques to combine/decombine and organize them, and receive or initiate RF burst transmissions using internal or external RF capabilities.

**Department of the Army Movement Management System-Redesign (DAMMS-R).** DAMMS-R provides an automated information processing capability in support of cargo movements, mode asset management, and unit movements within a theater of operations (TOPNS). It provides movement managers, highway regulators and mode operators with timely and accurate information on what cargo must be moved, when it must be moved, where it will move, who will move it, and in what priority it will be moved. The system functions will support the readiness mission in garrison and during training exercises to ensure rapid transition from peace to war. DAMMS-R will be the standard Army theater transportation management system, encompassing all levels of movements management and all modes of transport less pipeline. When fully developed, it will be capable of providing each theater and the operating elements there in a distributed interactive transportation management information processing system with go-to-war capabilities.

**Department of the Army Standard Port System-Enhanced (DASPS-E).** DASPS-E, a Department of The Army system, records cargo arrival, staging, and out loading information for Outside CONUS (OCONUS) ports. DASP-E will be replaced by the Worldwide Port System.

**Deployable Consolidated Aerial Port Subsystem (DCAPS).** DCAPS is the AMC deployable version of CAPS. Deployment, employment, and Mobilization Status System (DEMSTAT). DEMSTAT provides a command and control management tool to meet crisis situations requiring reserve component mobilization and/or the sub-Army units. It is capable of using the OPLAN in Time-Phased Force and Deployment Data (TPFDD) format and allows for the development of a special troop list.

**Deployable Intelligence Communications Support (DICS).** The DICS is the field extension of the USACOM Intelligence Network. It is a deployable intelligence workstation and, depending on operational needs, can be configured to meet several applications. One JDISS configuration operates at the collateral level, and another at a compartmented (SCI) level. Selected terminals provide an imagery transmission capability, offering a standardized terminal to replace other command

systems such as PORTS and FIST. The Joint Deployable Intelligence Support System (JDISS) will become the principal workstation used by USACOM and other commands to disseminate data, imagery, and facsimile intelligence to the field.

**Deployment Tracing System (DTS).** DTS will track aircraft visibility and develop organic schedules for AMC.

**Digital European Backbone (DEB).** DEB refers to the DCS digital microwave system in Europe. DEB upgraded and converted the previous analog line of sight microwave and selected troposcatter links to bulk encrypted, digital transmission. Typically, DEB links provide a transmission capacity of 25 mbps and 400 channels between nodes. It provides communications security up to TOP SECRET/SIOP-ESI.

**Digital Wideband Transmission System (DWTS).** The AN/MRC-142 is a High Mobility Multipurpose Wheeled Vehicle (HMMWV)-mounted multiplexer (MUD) radio terminal set which will operate from fixed positions to provide voice and data communications over LOS distances up to 35 miles. The radio terminal will operate in the UHF (300-3000 MHz) band, will provide two duplex channels, and will be able to handle digital data rates of 128, 256, and 512 kbps.

**Diplomatic Telecommunications Service (DTS).** The DTS provides record/data service between the State Department in Wash, DC and its foreign missions. DTS circuits predominantly ride DCS transmission systems and leased commercial links. These include the DTS satellite network SKYLINK, which uses approximately ten percent of the total power/bandwidth of the DSCS with DTS owned and operated earth terminals.

**Direct Broadcast Satellite (DBS).** DBS will, using VCR sized terminals with 18" antennas, satisfy warfighter' one-way (receive only), high capacity data requirements (such as imagery, ATO, and tomahawk MDU dissemination). ASD (C3I) and Joint Staff J6 are working to consolidate DBS requirements, develop a CONOPS, and initiate DBS program with goal of establishing a global DBS network as soon as possible.

**DOD Intelligence Information System (DODIIS).** DODIIS represents a worldwide intercomputer network linking intelligence data handling systems. These computer based information systems support the collection, production, and dissemination of various defense intelligence products. The system also supports the management of Defense intelligence assets throughout the world and provides a large number of automated information systems to process and catalog the extensive intelligence holdings.

**Dual Mode IFF.** The Dual Mode IFF is required to provide the F-14 and F/A-18 aircraft with a beyond visual range (BVR) capability to identify both friendly and hostile aircraft. Currently, the F-14 and F/A-18 each have half of the BVR capability. The F-14 has an IFF interrogation system which only provides identification of friendly aircraft and the F/A-18 has a Non-cooperative Target Recognition (NCTR) system which can only identify hostile aircraft. There is no system available

to provide identification of hostile aircraft in the F-14 and friendly aircraft in the F/A-18. To enable full use of BVR capabilities of the weapons systems in both aircraft under the conditions of the Rules of Engagement (ROE), a second source of identification is required. All F-14s require a NCTR system like the F/A-18 or F-15 as a second source, while the F/A-18 requires installation of a combined interrogator/transponder (CIT) system similar to that slated for the F/A-18 E/F.

**Dynamic Analysis and Replanning Tool (DART).** DART provides USTRANSCOM with the ability to analyze a deployment flow rapidly and replant as necessary.

**Early Pentagon Connectivity (EPC).** EPC is a survivable and secure voice system providing communications between NORAD, USSTRATCOM and the NMCC. It is a full-duplex 2.4 Kbps voice circuit which uses DSCS Channel One (ECCM Channel). The system is HEMP protected. EPC is available at several console positions (ICC-I and MLP-2 phones) in the USSTRATCOM Command Center. Connectivity is via the Red Switch.

**Echelons Above Corps-Communications (EAC-COMM).** EAC COMM (formerly TRI-TAC) is a joint service program to develop and field tactical multi channel and switched communications equipment. It is the Army C2 system for EAC communications, and provides interfaces to systems corps and below. It includes transmission, switching, control, and security equipment. It provides automated telephone and message switching and automatic fault isolation. There are four major area nodes for EAC battalions in Europe. Selected EAC nodes can interconnect with Mobile Subscriber Equipment (MSE) for corps level interface, and selected EAC nodes can interconnect with other Service systems and the DCS.

**Electronic Key Management System (EKMS).** Incorporated in EKMS are new Joint C4I for the Warrior concepts, technical capabilities developed for the strategic level Enhanced Key Management System and evolving security disciplines under the Defense Wide Information Systems Security Program security architectures. Once available, EKMS will provide technical solutions for the following current COMSEC problems: 1) vulnerability of hard copy key; 2) projections of increased keying material demands; 3) development of new COMSEC devices and keying materials requiring automated key management; and 4) increasing difficulties experienced in coordinating joint COMSEC complicated by force reductions.

**Emergency Shipping Information System (EMSIS).** EMSIS supports emergency shipping operations of the US Shipping Authority and the North Atlantic Treaty Organization Defense Shipping Authority. It processes National Security Agency requests for allocation of shipping capacity to relevant ships and allocates ships to MSC for strategic sea lift.

**Enhanced Airlift Reporting for Logistics and Operations (EARLO).** This program is a computer network which provides for the timely and accurate reporting of aircraft, aircrew, and flight information.

**Enhanced Frequency Resource Record System (EFRRS).** The EFRRS is a JCS sponsored system that provides frequency managers, at all levels, an ability to manage day to day as well as special case frequency requirements. It makes available specific information such as desired frequencies, details of transmitters and receivers, locations, time frames and assignments. The Electromagnetic Compatibility Analysis Center is currently analyzing the feasibility of integrating EFRRS with the Joint Spectrum Management System JSMS to provide a single system capable of interchanging, holding, analyzing, and disseminating spectrum management data.

**Enhanced Manpack Terminal (EMUT).** EMUT is a small lightweight line of sight UHF satellite transceiver capable of operating at all ranges within the satellite's footprint with cryptographic and DAMA operations capabilities for voice and data communications.

**Enhanced Position Location Reporting System (EPLRS).** The EPLRS is designed to provide a reliable data communications system to support tactical operations of Army air and ground units. It provides mobile battlefield environments with:

- 1) automatic near real time position computation; 2) position reporting; 3) friendly identification; 4) navigation; 5) automatic relay and network management; and 6) direct, user to user communications. The system links high priority elements within each combat functional area at primarily Army division echelon, and provides communications between these areas. Links are implemented through use of automatic integral relays with interfaces to host equipment at each end. EPLRS is a TDMA system using a frequency hopping, spread spectrum waveform in the UHF band. It incorporates internal COMSEC devices and has an Over-the-Air Rekeying (OTAR) capability. EPLRS provides position location, identification, and reporting information to both the user and to their higher headquarters. This information will greatly enhance the C2 of tactical units by providing commanders with the location of friendly units, a dynamic representation of the Forward Line of Troops (FLOT) and abbreviated situation reports (SITREPs). EPLRS equipped units can acquire the location of the tactical units equipped with PLRS and the location of their C2 facilities. EPLRS is part of the Army Data Distribution System (ADDS), an integrated C3 architecture for the modern battlefield.

**ENTERPRISE.** The purpose of the Army Enterprise is to provide a view of the information needs of the Army as a whole: a) as a fighting force, a component of a joint or combined force, b) the support and sustainment of that force, and c) the organizational, business, and administrative structure that supports all aspects of the Army.

**European Theater High Capacity Intelligence Communications System (ETHICS).** ETHICS is a European subset of the Joint Worldwide Intelligence Communications System (JWICS). It will augment DOD common user systems where such

systems lack either the capability or capacity to satisfy specific Intelligence Community requirements. It will consist of both fixed and deployable communications nodes co-located with the principal theater intelligence and Command and Control (C2) elements. It will include secure voice teleconferencing capability between the theater intelligence producers who will be in the United Kingdom and the users of their products who will be, for the most part, on the Continent or, in some cases, deployed with a Joint/Combined Task Force.

**EW Control System (EWCS).** The EWCS processes and integrates EW data received from unit resources for timely support to the CO/TAO. It contains a parametric database, supports EW-Single Source Integration (SSI), and enables timely unit EW resource management.

**EW Coordination Module (EWCM).** EWCM, a subsystem of the NTCS-A program, is designed to support tactical assessment, planning, direction, and redirection of BF/BG EW and C3CM assets. The EWCM has separate GENSER and SCI processors which are integrated via CIDs between the NCCS buses.

**Federal Cataloging Data System (FEDLOG).** A Defense Logistics Agency (DLA) sponsored system used by the Marine Corps as a Federal cataloging data system.

**Federal Telecommunications System (FTS-2000).** FTS 2000 provides a modern network with voice, data, and video services. It offers a wide variety of services using state-of-the-art digital, fiber optic, and networking technology. The AT&T portion of the system serves approximately 800,000 government personnel. Including US Sprint support, the system serves about 1.3 million users in 3500 locations. Switched data service allows information from host and person computers, facsimile machines, allowing fast data transfer when traffic is not high enough to justify a dedicated line. Packet switched service offers a way of transmitting low speed data that often occurs in peaks.

**Financial Management Information System (FMIS).** FMIS is a financial management system which provides MSC with a comprehensive, integrated, command-wide set of governmental financial applications. FMIS is designed to assist in supporting the fiscal and legal requirements and also the control and management of the financial requirements of MSC. FMIS will be replaced by the Transportation Financial Management System.

**Financial Management System (FMS).** FMS is MTMC's Command Army Industrial Fund and appropriated fund accounting system which provides management information to MTMC managers in CONUS and OCONUS. It performs budget, cost accounting, billing, disbursements, and resource management activities. FMS will be replaced by the Transportation Financial Management System.

**Fixed Submarine Broadcast System (FSBS).** The FSBS is a secure, one-way, record communications system from fixed shore locations to SSBNs. The primary FSBS means of communications is VERDIN, which is a multichannel VLF secure broadcast processing system. A single transmitter may support transmission of up to four channels. The secondary mode is LF and HF single channel FSK. FSBS/VLF/LF/HF locations are at Jim Creek, WA; Lualualei, HI; H.E. Holt, AS; Cutler, ME; and Keflavik, Iceland. A VLF site is located at Annapolis, MD (projected to be deactivated in FY 95). HF sites are at Moron, SP, and Sigonella, IT. It is used for force direction, command and control, operational intelligence, day-to-day administration and morale and welfare. It is also a subsystem within the JCS VLF/LF communications system. By seizing ALFA components of the Submarine Broadcast net through INMATES/AUTODIN, the CJCS can transmit EAMs directly to the nuclear forces.

**Fleet Broadcast System (FBS).** The FBS is the primary means for communicating message traffic to naval ships at sea. The broadcast consists of 16 channels of encrypted 75 baud teletypewriter data which is typically transmitted near simultaneously over LF, HF, and UHF SATCOM media. Various channels of the broadcast are designated for particular operational communities. Ships are expected to copy a set of channels, usually numbering four, rather than monitor the entire 16 channel broadcast. Naval Computer and Telecommunications Area Master Stations (NCTAMS) generate the broadcast for their area of responsibility using the Naval Communications Processing and Routing System (NAVCOMPARS) equipment which automates the dissemination process. The NCTAMS also serve as broadcast injection points for Fleet Satellite Communications (FLTSATCOM) transmissions. At selected shore stations, Fleet Broadcast message traffic is retransmitted from HF and/or LF transmitters. The High Speed Fleet Broadcast (HSFB) Program offers the capability to reallocate available information throughput capacity among users in response to changing tactical environments and the ability to handle traffic quantity and quality demands imposed by high speed automation subsystems.

**Fleet Flash Net (FFN).** The FFN is a network which provides C2 for tactical naval forces. It is used by major fleet commanders and authorized subscribers.

**Fleet Marine Force End-User Computing Equipment/Downsized End-User Computing Equipment (FMF EUCE/ DEUCE).** The FMF EUCE program will replace Automatic Data Processing Equipment (ADPE) FMF devices and numerous non-standard computers in the field with ruggedized, TEMPEST certified microcomputers. The program encompasses source data automation, personal computer, automated workstation, and word processing equipment. Users will be provided with a basic configuration and, where warranted, the ability to select a variety of optional hardware and software.

**Fleet Mobile Operational Command Center (FMOCC).** The FMOCC was developed to provide C2 connectivity with the Joint Component Commanders ashore as well as with Naval forces afloat. It will provide the Naval Component Commander ashore with a complete range of C3I features that has been designed to be the equal or greater than what would be available afloat. The FMOCC is normally housed in seven portable vans, and one or more command/operations center expandable shelters to support the commander and his staff; all can normally be airlifted in nine, C-130 aircraft or two C-5 aircraft. FMOCC provides communications (SHF, UHF, HF, commercial phone, facsimile (FAX), STU-III (STel), International Maritime Satellite (INMARSAT); intelligence (Naval Intelligence Processing System (NIPS), JDISS, Cable News Network (CNN)); imagery (JDISS, Fleet Imagery Support Terminal (FIST)); tactical strike (Joint Operational Tactical System (JOTS), JTIDS, Link 11, Mobile Universal Link Translator System (MULTS), Tactical Information Management System (TIMS), Link 11, Mobile Universal Link Translator System (MULTS), Tactical Information Management System (TIMS), Tactical Air Mission Planning system (TAMPS)); and ATO (CTAPS) capability for the Navy Component Commander Ashore.

**Fleet Satellite Broadcast System (FSBS).** The FSBS provides the principal record and message distribution means to the fleet. It has replaced the HF radio broadcast as the primary means. It supports primarily fleet units and tactical forces (USMC) ashore.

**Fleet Satellite Communications System (FLTSATCOM).** FLTSATCOM is a system of three US Navy UHF satellites in equatorial geosynchronous orbit. The system provides virtually worldwide connectivity between 70 degrees N and 70 degrees S for a variety of long haul, point to point, broadcast, and netted communication links among mobile and shore units. Each FLTSATCOM satellite has the capability to relay communications on 23 separate UHF channels, ten 25 KHz channels, twelve 5 KHz channels, and one 500 KHz channel for each satellite. The ten 25 KHz channels have been dedicated for Navy use. The twelve 5 KHz channels are part of the Air Force Satellite Communications (AFSATCOM) package. The 500 KHz channel may be used by either the Navy or Air Force depending on satellite location.

**Fleet Submarine Broadcast System (FSBS).** The FSBS is a VLF and LF communications network providing a means for the two submarine Broadcast Control Authorities to transmit messages to deeply submerged submarines. The FSBS complements the Submarine Satellite Information Exchange System (SSIXS), providing an alternative transmission path.

**Follow-On Tactical Reconnaissance System (FOTRS).** The FOTRS program is an umbrella reconnaissance concept that includes two projects, the ATARS and the JSIPS. This FOTRS combination will provide a near-real-time tactical imagery capability; the ATARS common-sensor suite will be carried on the USN F/A-18C, USMC F/A-18D, USAF F-16, and unmanned aerial vehicles-medium range (UAV-MR) while the JSIPS ground station supports the ATARS imagery sensors and is capable of receiving, processing, and exploiting the digital data from either the data link or tape recordings. Interservice program benefits will be derived through the use of equipment and technology being developed for the FOTRS program.

**Force Augmentation Planning and Execution System (FAPEES).** FAPEES is used in the areas of manpower and mobilization analysis for joint operations. It is primarily a retrieval and reporting system. The FAPEES is a component of JOPES/TIP application programs. It is accessible via TIP workstations along with the Dynamic Analysis and Replanning Tool, (DART), Logistics Sustainment Analysis and Feasibility Estimator (LOGSAFE), and the Joint Flow and Analysis System for Transportation (JFAST).

**Force Level Execution (FLEX).** The system will provide additional automation to the combat operations division for the command and control system architecture in ACC, USAFE, and PACAF to assist in near-real-time monitoring and execution of the air tasking order (ATO) based on rapidly changing battlefield conditions. FLEX will have the capability to support planning, monitoring, assessment, targeting, and plan modification.

**Forward Area Air Defense Command/Control And Intelligence System (FAADC2I).** Part of the Army Tactical Command and Control System (ATCCS) that integrates all forward areas' air defenses against enemy aircraft and airspace management. FAADC2I is being developed to coordinate the Army's new air defense system (formerly Short Range Air Defense (SHORAD)). It will provide connectivity for all of the FAAD systems and will use a mixture of off-the-shelf ground sensors and both new and existing aerial sensors including AWACS. The FAADC2 system consists of processors and displays, software and communications equipment to meet the C2 and targeting needs of FAAD battalions and separate batteries. This system will also fulfill the functional requirements of the air defense artillery component of the ATCCS and will interoperate with joint and allied High-to-Medium Altitude Air Defense (HIMAD) C2 systems.

**Future Command And Control Vehicle (FC2V).** The FC2V is a USAREUR prototype effort supporting the Army's XM4 Command and Control Vehicle (C2V), the scheduled replacement for the M577 Command Post Carrier. Unlike the M577, the C2V operates with the staff seated at workstations in the vehicle. Also, unlike the traditional command post where junior soldiers operate the radios and computers while the decision makers reflect at the map, the C2V concept has the principle staff operatives and decision makers electronically tied in to each other and operating the automation systems. This is a radical concept, allowing the vehicle to operate stationary or on the move without the need for setting up a large command post, thus being as mobile as the forces it controls.

**Garrison C3I Improvements (USSOCOM HQ).** This program extends USSOCOM communications to forward-located SOF elements beyond the SOC's to provide the SOF-unique C3I to support mission planning and execution. This program extends SOCRATES to the locations identified in the SOFPARS ORD, supports the SOF intelligence vehicle, and provides SCAMPI connectivity to the centralized SOFPARS that will be used to train personnel in SOF mission planning. The program also funds the preplanned product improvement of the tactical gateways to provide a full T1-bandwidth.

**General Service Intelligence Traffic (GENSER).** GENSER traffic is classified traffic which does not require the added special handling normally associated with Special Compartmented Information (SCI), which requires additional safeguards in both handling and dissemination

**Geostationary Operational And Environmental Satellite (GOES).** GOES is the American geosynchronous satellite imagery system. USAFE receives a portion of the GOES imagery via the European-owned METEOSAT geosynchronous satellites. It interfaces with the DMSP Mark IV vans, where GOES data is entered into the USAFE Secondary Imagery Dissemination System (SIDS) network.

**Global Command and Control System (GCCS).** GCCS is a new initiative, intended to furnish warfighters at all levels with needed connectivity, rapid access, flexibility, and simplicity in operations for comprehensive, interoperable, global command and control capability anytime and anywhere. GCCS is intended to improve on WWMCCS capabilities and move data within the C4I for the Warrior program.

**Global Decision Support System (GDSS).** Global Decision Support System (GDSS) supports the air mobility system. Through automated interfaces, GDSS receives and sends mission schedule and execution data to and from various automated systems either automatically or semi-automatically. An example: Air Mobility Command Deployment Analysis System (ADANS) pulls requirements from the Joint Operation Planning and Execution System (JOPEX). Operations are planned, scheduled and pushed to GDSS for execution. Depending on system needs, GDSS shares both schedule and execution data with the following automated systems: ADANS, Command and Control Information Processing System (C2IPS), JOPEX (GCCS), and Global Transportation Network (GTN/GCCS).

**Global High Frequency System (GHFS).** HF communications of the USAF GHFS, formerly the USAFs Global Command and Control System (GCCS), provide ground/air/ground and point-to-point, long-range, voice communications for USCINCPAC to control strategic forces worldwide. The primary missions are to support strategic reconnaissance and exercise command and control of the strategic forces across the conflict spectrum. It also is used extensively for day-to-day aircraft reporting and point-to-point communications. The daily use of the total HF/SSB (single sideband) system in support of training exercises and position reporting has established the reliability and effectiveness of this system in a peacetime environment. It is also a valuable combat asset for both nuclear and conventional operations.

**Global Positioning System (GPS).** The Global Positioning System (GPS) is a space-based radio positioning and navigation system that will provide extremely accurate three-dimensional position, velocity, and system time to suitably equipped users anywhere on or near the earth. In one proposed configuration, six satellites will transmit a composite signal at two L-Band frequencies consisting of a protected navigation signal and a clear navigation signal. The signals contain data

such as satellite position, atmospheric propagation correction data, and satellite clock bias information. The system is passive and, therefore, unsaturable. The navigation accuracies are unaffected by weather phenomena and the pseudo random noise signal structure provides a degree of security and resistance to jamming. The GPS consists of three segments: space segment, control segment, and user segment.

**Global Transportation Network (GTN).** GTN is the automate support necessary to enable USTRANSCOM and its Transportation Component Commands (TCCs) to provide global transportation management. It provides the integrated transportation data and systems necessary to accomplish global transportation planning, C2, and in transit visibility during peace and war. The major subsystems of GTN include Patient Movements, Current Operations, Future Operations and Intransit Visibility (ITV). AMP and the US Transportation Command (USTRANSCOM) Regulating and C2 Evacuation System (TRAC2ES) are two separate systems that will be integrated into GTN to provide Future Operations and Patient Movement capabilities. GTN consists of hardware, software, telecommunications and procedures which allows efficient access to and transfer of information among multiple geographically dispersed transportation data bases. It supports the entire spectrum of transportation functions.

**Government Emergency Telecommunications Service (GETS).** GETS is a new service offered by the Office of the Manager, National Communications System (OMNCS), to meet National Security and Emergency Preparedness (NS/EP) requirements for the use of public, defense, or Federal telephone networks by government departments, agencies, and other authorized users. GETS provides authorized NS/EP users with nationwide and international switched voice and low-speed data telecommunications under a full range of emergency conditions, including nuclear war, using surviving assets of the Public Switched Network. GETS provides emergency access and specialized processing in local and long distance telephone networks. GETS is accessed through a universal access number 1-710-NXX-XXXX using common telephone equipment such as a standard desk set, STU III, facsimile, modem or cellular phone. A personal identification number is required for access. Government-leased networks which support the GETS include the FTS-2000 and the DISN.

**Granite Sentry.** Granite Sentry Upgrade Program FOC will incorporate CSSR and AUTODIN interfaces, Operations Plan (OPLAN) functionality, and the capability to produce Air Correlation Center Output Message Set (CCOMS) messages.

**Ground-Based Sensor (GBS).** The GBS is an NDI system capable of providing search and track functions against fixed and rotary wing aircraft. The GBS is a part of the FAAD system and there will be six GBS located in the Air Defense Battalion of all divisions. Each GBS will be netted with the C2I network to report those targets it is tracking. Each GBS will incorporate the capability to provide the IFF function to identify friendly aircraft and will have NCTR technology for passive identification of friendly and hostile aircraft.

**Ground Mobile Forces (GMF) Interoperability Program.** This program addresses the lack of interoperability between the Army and the Air Force SHF GMF terminals, which is a result of a difference in baseband and bulk encryption components. The baseband improvement modification to the AN/TSC-85A and the AN/TSC-93A and the AJ control modem modification to all GMF terminals, control centers, and gateways will result in increased interoperability.

**Ground Mobile Forces Satellite Communications (GMFSC).** GMFSC is the primary space-based multi channel communications capability available for deployed tactical forces on a worldwide basis. Employing mobile SHF terminals and the DSCS satellite constellation along with NATO SATCOM IV and the British Skynet satellites on a shared basis, the GMF system furnishes long haul transmission media for meeting both a deployed force's internal communications needs as well as external connectivity between tactical commands of the Army, Marine Corps, and the Air Force. GMFSC accesses the DCS through GMF SHF Gateways at specified DSCS earth stations.

**Group Operational Passenger System (GOPAX).** GOPAX, a MTMC system, records requests for movement of personnel in groups greater than 20 and records the resultant contract data.

**GUARDRAIL Airborne Tactical Intelligence System.** GUARDRAIL is an Army airborne tactical SIGINT reconnaissance program use to provide near real time tactical intelligence to the warrior at the Army corps level on the battlefield. The GUARDRAIL is capable of near all-weather, 24-hour operations to perform both ELINT and COMINT missions. The platform is a Beechcraft 200 series twin turbo-prop aircraft, the RC-12H.

**Hand-held Intra-Team Radio (ITR).** Procurement of hand-held intra-team radios will replace the AN/PRC-68, MX-300, and Sabre family of radios. It provides NSW forces with a secure, programmable, waterproof, SOF standard intra-team radio.

**HAVE QUICK (UHF Radio System).** HAVE QUICK is an anti-jamming system for airborne and ground-to-air UHF radios. It is installed as an appliqué which converts existing radios to frequency hopping capable radios. The current standard is HAVE QUICK II (slow hopping rate). The HAVE QUICK IIA fast hopping mode (SATURN) is a potential NATO standard. The HAVE QUICK waveform will be usable in the Navy's ARC-210 Combo Radio.

**HAVE STARE.** HAVE STARE is an X-band, large aperture, high resolution, high power imaging radar being constructed at Vandenberg AFB, CA. The system is scheduled to undergo initial systems testing at Vandenberg, and be disassembled and relocated to an eastern hemisphere location to satisfy Deep Space Surveillance Radar (DSSR) requirements.

**Haystack Radar Upgrade.** Haystack Radar Upgrade will be a new radar to provide 12 centimeter resolution radar images to the Combined Intelligence Center (CIC). The radar will be available on demand for USSPACECOM tasking.

**Headquarters Cargo System (HCS).** HCS provides a centralized record of cargo movement requirements to Headquarters AMC.

**High Altitude Radiation Detection System (HARDS).** A sensor on board the ABNCP that detects atmospheric nuclear detonations. It provides line-of-sight detection capabilities.

**High Frequency (HF) Radio.** HF Radio provides the capability to transmit voice and data over great distances in various ways, including point-to-point, broadcast, and net control modes of operation.

**High Frequency Communication Central (HFCC).** The HFCC operating configuration is envisioned as a self contained, stand-alone communications central for the MAGTF. It consists of the HFCC and the major component with a prime mover for transportability and an equipment trailer for power source and other associated equipment. It will also include adequate spare parts, fuel, and a three man operating team capable of sustained operation in the field without external logistics support for a 24 hour period. Logistics support thereafter must be available to assure continuous operation of the system for the MAGTF. The HFCC will be used primarily for long-haul, point-to-point communications within any area of tactical operations or to distant, fixed communications stations. It may be used for beyond-line-of-sight (BLOS) communications between units ashore and amphibious C2 elements afloat. In addition, it may also be used as an HF terminal for air C2 TADIL-A data links, and for shore-based data, voice, and record traffic terminal systems. Follow-on product improvements to the HFCC can provide HF ECCM capabilities and may also provide an interface to the Theater Nuclear Force Communication System. The HFCC will also be utilized as a supplementary or alternative link for UHF, SHF, and EHF satellite systems connectivity from the aviation combat element headquarters to subordinate air bases and air C2 agencies. It will serve as a primary long-haul and BLOS communications means to deployed MEUs, MEBs, and other air deployed Marine Corps forces. Besides the HF transmitting and receiving equipment, the HFCC will also include speech and record cryptographic equipment and record traffic terminal.

**High Speed Fleet Broadcast (HSFB).** The HSFB program provides an upgrade to the Fleet Broadcast System (FBS) transmission subsystem representing improvements in broadcast transmission speed, information throughput, and resource flexibility. The HSFB upgrade offers the capability to reallocate available information throughput capacity among users in response to changing tactical environments and the ability to handle the traffic quantity and quality demands imposed by high speed automation subsystems. It also provides a more efficient and reliable HF broadcast to forces afloat. As a result, the FBS will be a more responsive C3I link between fleet commanders ashore and their assigned forces. The HSFB is comprised of individually encrypted broadcast packages generated from multiple user subsystems. These broadcast packages are multiplexed into a 9.6 kbps aggregate bit stream used in the satellite transmission medium and a separate 1.2 kbps stream for use in HF. Multiplexing permits multiple user subsystems to share available satellite capacity and at the same time allows a measure of flexibility in altering subsystem bit rates in response to varying tactical operating needs and environments. In addition, forward error correction coding to the signal enhances

broadcast reliability and quality, and provides for the additional bandwidth margin necessary to effectively counter any satellite jamming and interference threat.

**HORIZON.** Horizon is an overarching USAF strategy for providing the war fighter with responsible, advanced C4I systems services. It will provide reliable, cost-effective, mission- and user-focused C4I systems. It supports the Joint Staff "C4I for the Warrior" concept which emphasizes joint interoperability objectives, derived from joint operational requirements.

**Iceland Air Defense System (IADS).** The IADS includes upgraded air surveillance radars which are operational and a semi-hardened Control and Reporting Center (CRC) for the air defense of Iceland. The radars provide complete 3D coverage surrounding the island which will be monitored in the CRC.

**Image Product Archive (IPA).** IPA, a newly developed system element for PA3I program, is installed on all LANs, both SCI and Collateral within in the PA3I. The IPA provides a distributed, standardized library function for imagery and imagery product storage and retrieval by consumers at the National, theater, force and unit levels throughout the world. Its design is based on commercially available hardware and software that conforms to industry and Government standards. IPAs allow: a) visibility into and sharing of image products between different exploitation, production and dissemination centers and DOD and National levels; and b) expansion for the collection/production resources for satisfying requirements, and reduction in collection tasking efforts for data that already exists.

**Improved Direct Air Support Center (IDASC).** A product improvement program (PIP) which will downsize the existing Direct Air Support Center configuration and provide digital interfaces with the ATAC, DCT, PLRS, and other external C2 systems.

**Improved HF Radio Systems (ISHFMR).** Improved HF radio systems are required to reduce dependency on UHF satellite communications for long-range command and control (C2). UHF satellite communications can be easily jammed and are susceptible to various man made disturbances. With UHF satellite access being extremely limited, SOF forces are only allocated limited access during real-world scenarios to meet all their long-range, communications requirements. ISHFMR will serve as the non-JASORS objective, HF manpack system for those missions not requiring an LPVD capability.

**Improved HF Radio/High Frequency Improvement Program (IHFR/HFIP).** The family of Improved HF Radios are made up of three radios, AN/GRC-193, AN/GRC-213 and the AN/PRC-104A. The GRC-193 is a 400 watt vehicle mounted radio while the GRC-213 is a vehicle mounted 20 watt radio. The PRC-104 is a man pack radio and a component of the GRC-213. The AN/PRC-104A IHFR system is a lightweight (14 pounds), man portable HF radio which provides tactical commanders with a reliable, full HF coverage capability to pass secure command and control information over

medium to long distances and over varying degrees of terrain features which normally would preclude the use of VHF/FM combat net radios.

**Improved High Altitude Radiation Detection System (IHARDS).** A system to detect atmospheric detonations producing radioactivity or EMP. It consists of three sensors and a display module that is installed in the USSTRATCOM Command Center.

**Improved Many on Many (IMOM).** An application of CTAPS, IMOM provides analytic assistance in evaluating the electronic order of battle, and the effects of stand-off jammers on threats. Analyzes and graphically displays an electronic combat (EC) environment conditioned by the effects of terrain masking on ground radar and accounts for weapon systems capabilities. Designed primarily as a mission analysis tool for manned aircraft, system capabilities include threat display, asset management, defense analysis, SEAD analysis, recce/passive defense analysis, and communications jamming analysis.

**Improved Message Entry Device (IMED).** Procurement of IMED will provide forces with a lightweight, compact, state-of-the-art interoperable SOF standard Digital Message Entry Device (DMED). KL-43C equipment with integrated COMSEC (ICOM) and variable speed modem (VSM) will be procured.

**Improved Remote Monitored Battlefield Sensor System (IREMBASS).** IREMBASS is a lightweight, multisensor (magnetic, seismic/acoustic, infrared) system consisting of sensors, relays, and monitors. It will be used for surveillance, detection, target classification, and direction of movements. This system will provide the capability for reconnaissance elements to report movement of enemy echelons/forces without exposing friendly forces in a traditional overwatch position.

**Initial Voice Switched Network (IVSN).** The IVSN provides an automatic circuit switched telephone network similar to DSN and SVS serving users throughout the NATO Alliance. IVSN is capable of interconnecting non-secure telephones, secure voice subscriber terminals or low speed data terminals up to 2400 tips. IVSN serves as the backup for interconnecting NATO nuclear command and control interests via the SCARS II network. Interconnections with several national voice systems is ongoing, to include: Belgium's BEMILCOM, German Air Force Automatic Communications System (GAFACS), Greek HEDICS, Norway's NDDN, the Turkish Armed Forces Integrated Communications System (TAFICS), the UK's Defense Fixed Telecommunications System (DFTS), and the US DSN.

**Integrated Booking System (IBS).** IBS will be MTMC's traffic management system at MTMC area commands. It will register cargo for sea lift, provide schedules for unit arrival at ports, and issue port calls to the units. It will replace the Mechanized Export Traffic System II.

**Integrated Command, Control, and Communications System (IC3).** IC3 will be MSC's C3 system and will be integrated with the Navy's Operations Support System. The Navy system will receive, process, display, maintain and/or access the unit characteristics, employment scheduling, combat readiness, war fighting capabilities and positional information of US and Allied forces.

**Integrated Communications Data Base (ICDB).** The ICDB contains both satellite and terrestrial communications data, and is the only single consolidated database of all CJCS approved Milsatcom requirements.

**Integrated Meteorological System (IMETS).** IMETS is a low density single function weather correlation and reporting system specifically designed and implemented to support the commander and soldier via full time interoperability with ABCS and the US Air Force Global Weather Service (USAFGWS). IMETS is Army owned and operated by USAFGWS weather personnel. IMETS employs the ACOE to the maximum extent possible. IMETS employs standard Army shelters and is fully mobile and transportable. There are no plans to migrate IMETS into another system or systems.

**Integrated Satellite Control (ISC).** Provide unified approach to acquisition of space systems and provide framework for current/planned assets to evolve into total integrated satellite control system. Supports control, maintenance, and operation of USSPACECOM on-orbit assets including surveillance, warning, environmental, navigation and communications satellites.

**Integrated Services Digital Network (ISDN).** The ISDN uses digital transmission technology to support the integration of voice, data, and image services through standard interfaces over existing Public Switched Telephone Networks (PSTNs). In addition to end-to-end digital services, ISDN also supports interworking with existing and analog voice circuits and terminal equipment. ISDN is a means of integrating communications services as well as modernizing PSTNs to make information management and movement more efficient. It will evolve from the existing PSTNs to combine with other third-party networks, such as packet-switching or satellite. ISDN architecture goals are to combine communications services currently offered over separate networks into a single integrated network to which any subscriber has access. The integration of services offers numerous advantages to subscribers including: access to different network services over a single line; simultaneous digital voice and data; universal access to the network using standard interfaces; circuit- and packet-switched data communications; switched and non-switched dedicated circuits; text message service (e.g., telex, E-mail, fax); and, an assortment of new services and applications facilitated by the ISDN's out-of-band signaling protocols (e.g., video conferencing). In order to provide these kinds of services through a common interface, two technical features are required: digital local transmission loops, and common channel signaling (CCS). The major advantage of digital transmission of the local loop, in addition to its capability to provide the integrated services, is large bandwidths and relative immunity to channel noise. The principal advantage of CCS is that it permits a clear

channel for network signaling and protocol services by separating these overhead services needed to request and maintain services from the actual subscriber services themselves, thereby, providing faster call "setup" and "tear down" times.

**Integrated Tactical Strategic Data Networking Program (ITDSN).** ITDSN will integrate the existing strategic Defense Data Network (DDN) and the present and planned tactical networks of the Military Services. ITSDN will provide a capability to rapidly and flexibly support the data communications requirements of the tactical user. The existing strategic DDN and the Services' present and planned tactical data networks will be integrated by establishing an internetwork to support all military activities, whether in garrison or mobilized. ITSDN, as an integral part of Defense Information System Network (DISN), provides the necessary interface between tactical elements and strategic long haul C4I systems. ITSDN internetting will allow the tactical user to share resources and access strategic assets available through DISN.

**Integrated Vessel Information Planning and Analysis System (IVIPS).** IVIPS provides MSC with the record of the voyage and location of ships controlled by MSC, as well as the location of chartered and space-chartered ships operating in the Defense Transportation System (DTS).

**Intelligence Analysis System (IAS).** IAS is an effort to automate intelligence functions (i.e., direction, collection, processing, production, and dissemination) to assist the MAGTF in focusing and tailoring support to operational needs. IAS will be fielded at the Marine Expeditionary Unit (MEU), Division, Wing, FSSG, Regiment, and Group levels. IAS software includes a situation map (SITMAP) to display friendly and enemy unit location and other tactical information, an automatic intelligence journal and workbook, a tactical amphibious collection management (TACM) capability, a gazetteer, a message text format editor, and the DELORME mapping system.

**Intelligence Correlation Module (ICM).** ICM is a software program that provides a capability to correlate, analyze, store, display, and disseminate multi-source intelligence information derived from near real-time and other collection systems/sources. The module will be integrated into the CTAPS as a tool to assist the AOC in ATO generation and battlefield decision making. At the present time, ICM is operated in a collateral environment, but the future maintains a need for it to operate at the SCI level. ICM can operate as a stand-alone program, but is intended to be integrated into CTAPS, with access to data, voice, and radio communications links. ICM will use the Combat Air Force (CAF) standard workstations and servers already resident within CTAPS. The most pressing improvement in ICM's future is the SCI capability, complete with enhanced imagery handling and collection management features.

**Intelligence Network (INTELNET).** INTELNET will provide an SI satellite voice and data network linking ships at sea with other intelligence subscribers afloat and ashore. INTELNET makes use of the significant capability of the ANDVT, that uses

COTS equipment that is common to all the armed services and numerous Federal Agencies, and a small, omnidirectional SATCOM antenna that provides the capability to use both UHF and SHF channels. INTELNET is the Navy's first multi-functional net, a hardware installation designed from the outset to have multiple applications and multiple subscribers as a ship transits from one theater to another. Instead of providing a pathway for a specific function (e.g., tactical air, ship control, OTH-T, etc.), INTELNET is intended to provide multiple pathways for many highly sensitive functions.

**Intelligence Pacific Command Center (IPAC).** The IPAC is located at CINCPAC Hq, Camp Smith, Hi., and is the central point for receiving, consolidating and disseminating data for the Pacific Theater. As the central collection point for the Pacific it operates at all levels of classification and serves the entire Pacific theater.

**International Maritime Satellite (INMARSAT) Satellite Terminal (INMARSAT-ST).** The INMARSAT-ST is a lightweight, commercial, satellite terminal which provides global secure voice, facsimile, and data transfer in a point-to-point mode or through an international, commercial, switched, telephone network. INMARSAT-STs are required to reduce dependency on UHF satellite communications for long-range, non-combatant missions. This terminal would primarily be used to provide a direct link between a deployed SOF unit and its headquarters. This system is capable of voice transmission at 9600 bps and data at 56/64 Kbps, weighs 75 pounds, can be set up in five minutes, can be transported as luggage on commercial aircraft, and can accept a wide range of input voltages.

**Intransit Visibility – Modernization (ITV-MOD).** The Intransit Visibility Modernization (ITV Mod) Program will migrate several stand-alone AMC transportation command and control systems from proprietary Honeywell DPS-90 hardware and software systems to a client-server based architecture residing on Open Systems hardware. This program is designed to establish an integrated corporate system at HQ AMC.

**Intratheater Intelligence Communications Network (IINCOMNET).** IINCOMNET is a packet switched data network providing a secure and survivable communications system for dissemination of intelligence in a conventional threat environment. It links major intelligence production centers in Europe, interconnects theater processing facilities and operational combat units, and provides gateways to key US and NATO command and control nodes. IINCOMNET operates as a subnet of the DDN for use by USAFE as the primary means in exchanging classified NATO releasable information. It offers teleconferencing, electronic mail, data base query and response, and data base synchronization.

**Inverse Synthetic Aperture Radar (ISAR).** ISAR has been installed in all S-3B ASW aircraft, ES-3A electronic warfare aircraft, and in at least one P-3C ASW aircraft per squadron. It provides enhanced periscope detection, multiple target tracking of several dozen vessels, additional frequency agility to reduce susceptibility to countermeasures, and has the ability to

provide better classification of surface ships. ISAR provides a continuous-imaging capability through special techniques which generate true, two-dimensional radar images of a recognizable nature of any selected surface platform target. It provides the capability to classify enemy shipping while normally remaining beyond the range of many hostile, surface-to-air missiles (SAMs).

**JFACC Decision Support System (JDSS).** Will be an executive and staff level information system to support the JFACC. Will provide the capability to access the force-level database for any intelligence, weather, operations, personnel, communications, and logistics information and display it as a graphics overlay or tabular text. JDSS will also provide the capability to manipulate the data for producing tailored reports and briefings.

**Joint Advanced Special Operations Radio System (JASORS).** JASORS will be the next generation lightweight, tactical, communications capability for deployed US Special Operations Forces (SOFs). The radio will be interoperable with other tactical communications and will provide low probability of intercept (LPI) low probability of detection (LPD), secure voice and data, lightweight, man-portable communications. Capable of transmitting on frequencies across the spectrum, including HF, VHF, UHF, and eventually SHF, it will provide both LOS and BLOS communications capability as a multimode, single-channel radio system. JASORS will consist of several subsystems, including a man-pack radio (MPR); a hand-held intrateam radio (ITR); man-portable, transmit-case base station (TBS); and an integratable base station (IBS).

**Joint Casualty Tracing and Cruelty Reporting System (JCT/CRS).** The JCT/CRS is a world-wide joint patient tracking system. It will provide a central data base to which joint commands, the Services, and other users can go to determine the location and medical status of a casualty no matter where the individual is undergoing treatment (e.g., from the field hospital to hospitals in CONUS). USTRANSCOM is the lead activity in the development of this system.

**Joint Chiefs of Staff Alerting Network (JCSAN).** JCSAN is a dedicated communications network which provides alert notices from the NCA to the CINCs.

**Joint Communications Support Element (JCSE).** This program upgrades and replaces the CJCS' contingency communications assets used for CINC support to ensure reliable communications, provide greater interoperability with Service equipment, and improve communications capabilities to meet future requirements. Package consists of multimedia, flexible, deployable tactical communications equipment operated by a dedicated active communications support unit and augmented by two Air National Guard Joint Communications Support Squadrons (JCSS). JCSE assets are controlled by the CJCS and are deployed to provide simultaneous communications support for two JTF HQs and two JSOTF HQs. Augments/provides CJCS-directed contingency and crises communications support to meet operational and support

needs of JCS, the Services, U&S commands, DOD and non-DOD agencies, and foreign governments. Until mobilized, JCSSs are controlled by the National Guard Bureau.

**Joint Crisis Management Capability (JCMC).** JCMC Level 2 is an airborne command, control, and communications capability immediately responsible to the Unified and Specified Commanders. It is designed to provide communications between a crisis scene, the appropriate area, and the NCA, to support rapid crisis situation assessment during disaster relief, contingency operations, or joint training exercises. It provides an airborne commander with command and control communications to deployed forces, higher headquarters, and the NCA. The system provides one full duplex HF/ISB radio, two UHF/AM radios, three VHF/FM radios and one VHF/AM radio for voice communications. Specially modified C-130E/H or C-141B aircraft permit the simultaneous use of all radios. One UHF satellite radios is available for voice or data communications; a second can be installed using a hatch mounted antenna. Two full duplex teletype circuits may be terminated in the communications center. Any of these systems may be selectively secured. Standard configuration includes one communications shelter, one operations shelter, and one staff shelter.

**Joint Decision Support System (JDSS).** Provides the Joint Staff and CINC J-6 with an automated decision support methodology and tool for the development of C4I system assessments and master plans; relates C4I systems and objectives to specific military mission elements. JDSS Version 3.0 Rolls up C4I systems assessments using expert value judgments, structures information for prioritizing objectives, and rank orders C4I systems by warfighting needs.

**Joint Deployable Intelligence Support System (JDISS).** JDISS is the coordinated, General Defense Intelligence Program community sponsored system to provide intelligence support to deployed Joint Task Forces (JTFs). The program was established to provide: 1) deployed JTF commanders access to theater and national intelligence; 2) deployed JTF commanders the means to transmit tactically derived information back to the national community; 3) on-demand broad bandwidth intelligence communications connectivity; and 4) a family of DODIIS standardized high performance workstations, communications equipment, cryptographic devices, transport packing, software and life cycle support. JDISS is integrated from commercial off the shelf and government off the shelf products.

**Joint Doctrine Data Net (JDDN).** JDDN is a multi-user electronic mail and bulletin board system for use in the development and review of joint doctrine/tactics, techniques, and procedures.

**Joint Flow and Analysis System for Transportation (JFAST).** JFAST is an application program subset of the GTN and the Technology Improvement Program of JOPEs. It is used for estimating the flow of an overseas deployment. It provides the capability to rapidly assist the transportation feasibility of strategic deployment from a lift asset capability and closure profile by depicting discrepancies among movement requirements and actual deliveries.

**Joint Force Reception And Onward Movement (JFROM).** JFROM is a USEUCOM command and control tool that provides: enhanced JOPES strategic visibility; in-theater tactical deployment and readiness visibility; data fusion of multiple external data sources into a single integrated workstation; graphical display of deployment and reception on mapped background; and both structured and ad-hoc retrievals of forms and reports.

**Joint Maritime Command Information System (JMCIS).** The JMCIS is one of two large C2 systems (the other being the NTCSS) in which the Navy's series of computer programs are being integrated. The JMCIS is a subset of the Navy's SONATA, which is in turn a subset of the GCCS. The program is designed to eliminate specialized computer and unique software, and to help to adopt standard software and computer hardware in line with DOD policy. The JMCIS is an operational C2 system providing tactical C2I planning, execution and supervision support for all warfare areas. JMCIS supports the C2I mission requirements of joint, Navy, and USMC commanders, as well as facilitating information exchange with national, joint, and theater level command authorities. It will combine the existing C2 programs used by the warrior to direct naval forces against enemy weaponry. These programs include the NTCS-A, the Operations and Support System, the Naval Command System Integrated Tactical Environment subsystem, and the Navigation Sensor Systems Interface Program. It provides timely, accurate, and complete all-source information management, display, and dissemination capabilities. The core system of the JMCIS is the Unified Build (UBII) software, which is the fundamental building block for all Navy tactical C2 applications software. The OSS, together with the UBII, has been chosen to serve as the foundation the GCCS, the "shell that everything will be built upon".

**Joint Maritime Information Element Support System (JIS).** JIS is a centralized maritime intelligence support system, housing an extensive maritime data base. It serves as a central pool of maritime related vessel data which is library-like in function and use, accessible to all JIS users, unsupported by an analytical staff, and provides information for manipulation by users.

**Joint Message Analysis and Processing System (JMAPS).** Provides United States Message Text Formatted (USMTF) Message processing. Supports manual message preparation, validation of received USMTF messages for compliance with the USMTF message standard as described in Joint Publication 6-04, extracting (parsing) user defined information from received messages for further processing/updating of databases and facilitating automatic generation of USMTF messages with information extracted from operational databases.

**Joint Mobile Command Capability (JMCC).** The JMCC requirement is for a mobile, integrated, modular C4I capability that is readily available to support the JTF commander under varying contingency situations from disaster relief of humanitarian aid to a full range of combat operations with combined land, air, and naval forces. The JMCC must enable the JTF commander to be augmented by, or collocated with command elements of his supporting component/combined

warfighting forces. A key requirement is to link the JTF commander with his forward operating forces, the theater CINC, and the NCA in a fully integrated joint mobile C3I capability. The JMCC must be a robust, scalable system with sufficient accommodations and C2 space to support a CJTF from any Service at the level needed to support the JTF mission. JMCC capabilities must include a Joint Operations Center (JOC), a JIC, and a Logistics Readiness Center (LRC) and it should be able to expand as necessary to support all elements of the National Intelligence Support Team (NIST), the Joint Forces Fires Coordinator (JFFC), Joint Force Air Component Commander (JFACC), Joint Special Operations Forces (JSOF) liaison teams, and tailored Service component commander staffs or liaison teams. It must include the capability to receive, process, exploit, and disseminate theater/tactical sensor data including imagery intelligence (IMINT) and SIGINT. JMCC communications design must support the C4I for the Warrior C4I(TW) architecture and must be flexible enough to operate over MILSATCOM, commercial satellites, and when required, over allied satellites.

**Joint Publication Management System (JPMS).** JPMS facilitates the management of joint publications.

**Joint Resource Assessment Data Base Report System (JRADS).** JRADS will provide an automated system for the collection, transmissions, editing, and update of US military fixed resources contained in the Joint Resource Assessment data base during a peacetime environment and reporting damage to these resources during the three time phases subsequent to a real (or simulated) nuclear attack upon the US in support of a Residual Capability Assessment. JRADS will be used by NCA to formulate further military action.

**Joint Operational Tactical System (JOTS).** JOTS is a precursor to and has been incorporated into the Navy Tactical Command System-Afloat (NTCS-A). JOTS is a desktop computer based tactical information transfer, display and decision aid system. It uses existing communications links and C2 system interfaces to provide users with a near real time maritime battle management and command control system for displaying worldwide force locating data. JOTS receives, processes, and displays data directly from various broadcasts, including OTCIXS, TADIXS A, and NTDS Link 11/14. It automatically processes certain incoming message formats, such as US Message Text Formats and satellite vulnerability reports. JOTS also performs other functions such as multi-source track association/matching, contact management, query and status, and formation and track management. It generates and exchanges color tactical graphic displays, formats and hard copy on request.

**Joint Operational Tactical System/Visual Display System (JOTS/VIDS).** The JOTS/VIDS is a desktop computer-based tactical information transfer, display, and decision aid system. The system uses existing communications links and C2 system interfaces. It provides users with a near real-time maritime battle management and C2 system for the display of worldwide force locating data.

**Joint Operations Planning And Execution System (JOPEs).** JOPEs is an integrated command and control system used to support joint conventional military operation planning (to include theater-level nuclear and chemical planning activities) and monitoring requirements for mobilization, deployment, employment, and sustainment. JOPEs provides senior level decision makers and staffs of the NCA, JCS, CINCs, Component Commands, Military Services, and agencies of the DOD with an enhanced capability to plan, coordinate, and conduct joint military operations. JOPEs has the capability for supported commanders to identify between requirements and capabilities, and procedures to conduct risk analysis, resolve shortfalls, and redefine strategic concepts if risks are too great.

**Joint Service Imagery Processing System (Nat'l Segment) (JSIPS-NS).** The JSIPS is a mobile ground processing facility designed to receive and exploit imagery from national and theater sources. Product improvement options include a common radar processor to process both tactical and theater radars, and an automated capability to insert and process mapping, charting, and geodesy products. The technology thrust is to NRT, soft-copy, digital imagery, which is linked from the sensor platform to the processing facility.

**Joint Service Imagery Processing System (Tactical Segment) (JSIPS-TS).** JSIPS is a DOD common transportable ground station which receives, processes, exploits, and disseminates time-sensitive all-source imagery products and imagery derived intelligence reports in near real time. The Army has already fielded JSIPS; the Air Force and Marine Corps has the JSIPS system in development/test at Eglin Air Force Base with the requirement that it could be ready for operational use in 30 days if required; the Navy's system is in development. The JSIPS system is transportable in ruggedized shelters with EMP protection.

**Joint Spectrum Management System (JSMS).** The JSMS is a personal computer based (UNIX/DOS) system capable of providing near real time management, analysis, engineering, and deconfliction of the frequency spectrum at all levels of command and the capability of interchanging this data with multi-service/multi-national organizations. This system provides the commander with the information and flexibility required in various scenarios and is especially suited for contingencies and deployments.

**Joint Surveillance Target Attack Radar System (JSTARS).** Joint Stars is a joint Air Force/Army program, replaces PAVE MOVER, to develop an airborne phased array radar system for detecting, tracking, and directing weapons against mobile and mobile/stationary ground targets. The system uses a Boeing E-8A aircraft equipped with a phased-array antenna in a conformal belly pod that can operate both as a synthetic aperture side-looking radar to detect fixed surface targets or in a doppler mode to detect slow moving vehicles on a time sharing basis. The system includes the Army AN/TSQ-132 truck mounted ground station modules and data link connectivity for transmitting raw radar data to the Army ground stations. Targeting information is transmitted to Air Force controllers on the ground via JTIDS and can

also be provided directly to JTIDS equipped tactical aircraft. The E-8A is equipped for secure communications using HAVE QUICK and SINGARS for anti-jam communications with Army units.

**Joint Tactical Information Distribution System (JTIDS).** JTIDS is a high capacity, high speed, spread spectrum/TDMA information distribution system to provide selected US Air Force and Navy Airborne Warning And Control System (AWACS) and tactical units with crypto secure, jam resistant, low probability of exploitation tactical data and voice communications. It will provide precise Tactical Aids to Navigation (TACAN), relative navigation, and identification, and will have additional capabilities of common grid navigation. It will also use automatic relay capability inherent in the long range communications equipment. The system will be interoperable among the Services and NATO/Allied users equipped with JTIDS or the NATO Multifunctional Information Distribution System (MIDS). (Germany, Italy, France, and Spain will have this capability.)

**Joint Universal Lessons Learned System (JULLS).** JULLS provides a reference file for lessons learned during joint exercises.

**Joint Visually Integrated Display System (JVIDS).** JVIDS provides the capability to monitor the positions and status of US naval ships, convoys, foreign naval ships, and merchant ships on a digital map. It receives intelligence reports from US naval ships and updates the Atlantic and Pacific C2 centers and provides digital mapping of the ships and their locations.

**Joint Worldwide Intelligence Communications System (JWICS).** JWICS is a SCI high, interactive video teleconferencing system connecting Indications and Warning centers and the Washington area Secure Video Teleconferencing System. It enables I&W centers to share timely information with other Watch Centers throughout DOD in order to ensure 24 hour a day operational intelligence support for worldwide events of concern to senior decisionmakers. It is used to "broadcast" daily and/or crisis intelligence briefings from anyone site to one or more sites. In addition to video teleconferencing capabilities, JWICS provides capabilities for transmission of photographs, maps, or other graphic materials.

**LAJES Command Post (CP) Upgrade.** A joint command post is being established to improve Commander US Forces Azores (COMUSFORAZ) warfighting capability by providing a secure, centrally located, C2 center for all US peacetime and contingency operations throughout the Azores area of responsibility (AOR). Improvements include dedicated secure voice, secure teletype, clear voice communications systems that are capable of operating on HF, VHF, and UHF transmission media and over wireline and satellite paths.

**Land Satellite (LANDSAT) 7.** LANDSAT 7 will improve Multispectral Imagery (MSI) data access through direct theater downlink and Tracking Data Relay Satellite System (TDRSS) crosslink.

**LANTCOM Theater Intelligence Network (LATIN).** LATIN is the name of the program to implement the USCINCLANT/Commander in Chief US Atlantic Fleet (CINCLANTFLT) IDHS functional capabilities and provide the communications connectivity to the DDN DSNET 3 SCI Network for all headquarters users and subordinate commands connected to the IDHS. This program is also used to identify and provide the communications necessary to connect LANTFLT users to the LANTCOM IDHS. A follow-on effort is already underway to implement a new five year effort to continue LATIN modernization and network expansion.

**Lift Manager (LIFTMGR).** LIFTMGR is a collection of command unique automated tools designed for use in the USTRANSCOM command centers and Crisis Action Teams. These tools allow USTRANSCOM to plan and operate airlift and sea lift allocations through the entire operations spectrum. LIFTMGR provides the rapid and detailed "what if" analysis needed for USTRANSCOM's C2.

**Lightweight Computer Unit (LCU).** The LCU is an Army tactical computer system which is being purchased for Army SOF to fulfill inventory objectives not met by the Lightweight Deployable Communication (LDC) system.

**Limited Operational Capability (LOC).** LOC is the official gateway to the NATO Allied Command Europe (ACE) Battlefield Information Collection and Exploitation System (BICES). Most LOC users are foreign national. There is a direct, two way interface between LOC and the German JASMIN intelligence system, which operates at the German equivalent of SECRET. LOC also feeds the NATO Central Region Command and Control Information System (CCIS) through a two way interface.

**Logistic Sustainment Analysis and Feasibility Estimator (LOGSAFE).** LOGSAFE is an application program subset of the GTN and the Technology Improvement Program of JOPES. LOGSAFE provides stand-alone, deliberate planning, logistics sustainment analysis, feasibility estimation, resupply requirements generation, and appraisal of contingency plans.

**Logistics Intercomputer Network/Movement Information Network (LINK/MINET).** LINK is the outgrowth of an earlier EUCOM project to extend and develop the Movements Information Network (MINET) to more fully support the USEUCOM logistics mission. LINK was developed for the EUCOM AOR in collaboration with the Lawrence Livermore National Laboratory and has been incorporated into the DOD's project to implement Electronic Commerce through Electronic Data Interchange as an operational prototype. LINK provides visibility of logistics assets in CONUS, in-transit, and in Europe to EUCOM J4, component, and Defense Logistics Agency (DLA) users. It provides EUCOM personnel a decision support system with access to logistic databases, both commercial and military, worldwide.

**Long Range Imagery Networked Communications System (LINCS).** There are currently a number of incompatible secondary imagery dissemination systems (SIDS) causing inter operability problems. The LINCOS program will replace current systems with a compatible solution based on a system compliant with DODIIS standards. Under this program, imagery exploitation capabilities will be integrated into the EUCOM Intelligence Support System (EISS) and then expanded to current SIDS users. Since some SIDS users must operate at the SECRET collateral level, a restricted version of EISS will be created and provided to these users. Imagery products will be manually transferred between the systems after classification downgrading.

**MAGTF Data Library (MDL).** MDL programs encompass source planning management and technical data extracted from mainframe databases/systems on a monthly basis. Acts as the origin of all standard source data elements used by the MAGTF II/LOG AIS family of systems, and contains critical elements such as Tables of Organization/Equipment, ammunition consumption factors, and aviation data.

**MAGTF Development Support System II (MDSS II).** Enables Commanders at various echelons of MAGTF to build and maintain a database that contains force and equipment data reflecting how the MAGTF is configured for deployment.

**MAGTF Warplanning Model II (MAGTF II).** A system that allows MAGTF planners to select and tailor MAGTF force structures, estimate sustainment, and estimate airlift/sealift requirements for plan feasibility.

**Maintenance Resource Management System (MRMS).** The single management information system for ship intermediate maintenance. The MRMS program includes hardware, software, communications and logistics support and is installed aboard Aircraft Carriers, Destroyers/Submarine Tenders and large Amphibious Ships."

**Malfunction Detection and Recording System and Ground Processing System (GO81).** GO81 provides the Air Mobility Command both a worldwide maintenance management system and a Logistics Command and Control (C2) capability for aircraft. The system is considered a Mission Critical Computer Resource (MCCR) for all mobility airlift (C-5s, C-141s, C-17s, KC-10s and KC-135s). The system provides for real time updates and access to critical logistics information from AMC bases worldwide.

**Man-Transportable SOCRATES (MTS).** The MTS is a highly mobile system which will give deployed intelligence personnel at the deployed component-level automated tools similar to those provided by the SOCRATES system in garrison.

**Maneuver Control System (MCS).** The MCS is one of five Army Command and Control System (ACCS) programs intended to automate the battlefield. MCS automates C2 in Armor, Infantry, and Combined Arms formations and interfaces with other functionally oriented battlefield C2 systems. MCS will be the primary tool for collecting, analyzing, generating,

and distributing tactical information and orders. MCS provides advanced electronic mapping capability by allowing map makers to draw information from five databases that track friendly forces, enemy forces, control measures, obstacle barriers, and nuclear, biological, and chemical data. MCS has an automatic database replication feature and an interface to the Standard Theater Army Command and Control System (STACCS), HEROS (Germany), WAVELL (UK), SACRA (FR), and WWMCCS. The MCS began transitioning to the digital computer system acquired for the ATCCS in 1994.

**Mapping Analysis Tool for Transportation (MATT).** MATT will integrate current/planned sources of worldwide transportation facility and capability information with related mapping, charting, geodesy, and imagery/photography products to provide a highly graphic, interactive representation of the physical transportation situation for use by USTRANSCOM and TCCs.

**Marine Air Ground Task Force Lift Module II (MAGTF II).** MAGTF II will provide Marine Corps/Navy common-user air and surface lift requirements. MAGTF II is the Marine Corps/Navy version of TCAIMS Micro-Based Budget Automated System (MICROBAS). MICROBAS extracts budget data from the Defense Finance Accounting System for budget planning and execution.

**Marine Corps Data Network (MCDN).** The MCDN is a subset of the DISN-NT consolidation effort. It is primarily a CONUS-wide network (one location in Okinawa), consisting of 15 nodes and with T1 connectivity among nodes. Leased facilities are used to provide the long-haul connectivity for the network.

**Marine Combat Service Support Command and Control System (MCSSC2).** An automated combat service support command and control system that serves as an umbrella system within the MAGTF C4I command and control system.

**Marine Corps Tactical Air C2 System (MTACCS).** The MTACCS is the USMC tactical C3 program designed to provide communications program designed to provide communications and other systems that allow FMF tactical commanders to exercise C2 over assigned forces. Currently MTACCS includes the following systems: Intelligence Analysis System (IAS); Marine Air-Ground Intelligence System (MAGIS); Tactical Combat Operations (TCO) System; USMC fire support systems FIREMAN and FIREFLEX; Position Location and Reporting System (PLRS); Tactical Air Operations Module (TAOM); and Improved Direct Air Support Center (IDASC).

**Marine Corps Total Force System (MCTFS).** An integrated system of automated pay and manpower information reporting procedures, centralized processing and distributed databases. The system provides for recording, processing, and maintaining of military personnel and pay data on a continuing basis.

**Maritime Defense Zone Command, Control, and Communications (MDZ C3).** MDZ C3 project will integrate Navy and Coast Guard assets into the coastal defense plan of the United States. This project will provide C2 interfaces and secure communications equipment between Navy and Coast Guard platforms and shore stations in time of crisis. The system itself will use NDI communications gear and commercial computer hardware. This project is an effort to use communications and computer equipment to provide accurate and effective C3 interfaces between Navy and Coast Guard assets.

**Message Text Format Editor/Joint Message Preparation System (MTFE/JMPS).** A Joint Staff initiative replacing the MTF Editor, to develop a single USMTF message preparation module for use by all of DOD. Provides message validation to ensure adherence to the standard and ensure acceptance of the message by automated systems.

**Military Airlift Command Planner's Tool Kit (MPT).** MPT, an AMC system, provides airlift planners with a set of analytic tools to quickly address specific problems associated with the analysis of small contingencies. Its major capabilities include analyzing the change of a single mission in a larger deployment plan without having to recalculate the entire airlift schedule; estimating gross closure profiles from aggregated movement requirements; querying and displaying station aircraft data; and calculating distances and flying times.

**Military Airlift Integrated Reporting System (MAIRS).** MAIRS, an AMC system, records and displays airlift schedules, aircraft arrivals and departures, and aircraft status.

**Military Export Traffic System II (METS II).** METS II is the traffic management system at MTMC area commands. It provides schedules for unit arrival at ports and issues port calls to the units. METS II will be replaced by IBS.

**Military Network (MILNET).** The MILNET is a subset of the DISN-NT consolidation effort. It is a worldwide, unclassified common-user, packet-switching, data communications network that provides data exchange services and related support services to the DOD users. The current estimation of user devices accessing the MILNET is in excess of 3000 hosts within 500 Local Distribution Systems.

**MILSATCOM Polar Adjunct.** The current satellites providing polar support do not meet warfighter requirements and are nearing the end of their expected lifetimes. The MILSATCOM polar adjunct will provide satellite communications for forces operating in the northern latitudes (65°N - 90°N). The USN is working on a Milstar compatible, near-term (1997 launch) interim system which will provide limited polar support. USAF is working on a Milstar compatible system designed for full requirements satisfactions with a projected launch NLT 2003.

**MILSTAR.** The Military Strategic - Tactical Relay Program (MILSTAR) Satellite Communications System is being designed as a new generation communications system to meet the projected minimum essential wartime operational requirements associated with military communications. The program objective is to develop and deploy an affordable terminal and satellite system with jam-resistant capability to satisfy specified strategic and tactical long-haul and local communication requirements. MILSTAR will be comprised of a Space Segment, a Mission Control Segment (MCS), and a Terrestrial Segment. The MCS provides the collective equipment, facilities, and support to provide space segment control and to support communications control. MILSTAR will employ terminals developed by the Army (MILSTAR Single Objective Tactical Terminals or SCOTT), Navy, and Air Force and will be deployed on airborne, shipboard and ground platforms.

**Milstar Terminals.** Provides secure, survivable communications to US warfighting forces during all levels of conflict via Milstar satellite. A Mix of fixed, ground-transportable, manportable, airborne and shipborne terminals. Supports wide range of Milstar users (SIOP execution, tactical force deployment, critical warfighting missions). Approximately 1200 terminals currently planned.

**Miniature Multiband Beacon (MMB) (AN/PPN-20).** A self-contained, lightweight man-portable, navigation beacon used for radar navigation, offset beacon bombing and all-weather, drop-zone marking. Weighs less than 12 pounds and is less than 400 cubic inches in size. Operates in the X and KU radar bands when activated by properly equipped NATO aircraft. The MMB consists of a transponder set AN/PPN-20 and a test set AN/PPN-4.

**Miniature Receive Terminal (MRT).** MRT provides a vital VLF/LF communications link to the B-1B and B-52H bombers at (or enroute to) their positive control turnaround points. This will assure reliable and survivable emergency action messages receipt in a nuclear stressed environment. The MRT is EMP hardened, secure, jam-resistant, and provides the following capabilities: frequency and mode scanning, MEECN interoperability, message piecing, and polarization diversified. It consists of receiver with a plug-in transfer module for encryption variables and mission profiles, three antennas, a remote control unit, and a printer.

**Miniaturized Airborne GPS Receiver (MAGR).** Several potential Navigation Satellite Timing and Ranging (NAVSTAR) GPS users are unable to employ the existing Rockwell-Collins airborne user equipment because of space and/or weight constraints. The MAGR acquisition program is responding to these needs through the acquisition of a small, lighter receiver. The MAGR will consist of an antenna, a signal receiver/processor, and a control/display unit which processes and displays three dimensional user position, as well as velocity, time, and distance traveled.

**Miniaturized Satellite Threat Reporting System (MSTRS).** MSTRS is a modular satellite subsystem that will detect and report hostile acts against US space assets. The MSTRS will consist of an array of threat detection sensors that feed into a central processor. The MSTRS ground segment will interpret the transmission and present the information to a ground operator.

**Missile Graphics Planning System (MGPS).** This is a graphics based user interface system which supports interactive missile allocation/application, missile maintenance and SSBN launch patrol areas. This system displays the location and characteristics of weapon assignments and targets plus submarine launch patrol areas.

**Mission Data Preparation System (MDPS).** MDPS provides the link between the SMDPS and the B-52G/H Offensive Avionics System (OAS) including the Air Launched Cruise Missile (ALCM). MDPS also validates mission data and simulates B-52/ALCM flight performance including time, fuel and distance.

**Mobile Operations Control Center (MOCC).** The MOCC is a rapidly deployable, P-3 aircraft, C3 ground support system designed to support Maritime Patrol Aircraft (MPA) operations from advanced bases worldwide during peacetime, contingencies, or full mobilization. The MOCC is completely self-contained for power, computer resources, and communications and is modular in design to provide flexibility to meet specific mission requirements for short or long-term deployments. MOCC equipment is containerized and can be transported to a mobilization site aboard two P-3 aircraft. The MOCC emulates the critical support functions of a shore-based ASWOC, including acoustic analysis, C2, ADP, and communications. Where they exist, MOCCs will be co-located with the ASWOCs.

**Mobile Subscriber Equipment (MSE).** The MSE provides the Army with a highly mobile all-digital, secure, automatic-switching tactical communication capability for use at the corps level. MSE provides voice, data, teletype, and facsimile communications for digital radio telephone users, switched-system subscribers, and Combat Net Radio (CNR) users. MSE permits mobile users anywhere in the corps area to place and receive calls similar to using a telephone. The system will significantly reduce the need to install wire and cable when establishing command posts. It will consist of five major hardware functional elements: subscriber terminals, multiple subscriber terminals, wire subscriber access, area coverage, and system control.

**Mobility Analysis and Planning System II (MAPS II).** MAPS II provides MTMC with the capability to develop management tables from time-phased deployment data inserted during the deliberate planning process. It also assists in development of movement schedules for execution and performance of transportation feasibility analyses. MAPS II will be replaced by the Strategic Deployment System.

**Mobility Analysis Support System (MASS).** The Mobility Analysis Support Systems (MASS) provide a set of simulation, modeling, and analysis tools to answer questions related to mobility airlift and tanker operations posed by the AMC Staff, USTRANSOM, HQ Air Force, JCS Joint Staff, and the OSD. The MASS is used in wartime operations in making informed decisions on the use and deployment of airlift assets, and the timing of reserve and CRAF activation.

**Modular Air Operations Center (MAOC) Improvement Program.** The MAOC Improvement Program provides a complete hardware upgrade to effect a fully automated, integrated, and interoperable operations for deployable MAOCs. In addition, it replaces current structures with 3: 1 expandable shelters. Within the Air Force TACS, the AOC is the senior element and is normally located with the Air Force Component Headquarters on or near a tactical air base. The AOC performs basic C3 functions, including input to the theater level commander. The AOC is required to assimilate, evaluate, and disseminate large amounts of information to manage tactical air operations and is organized into four functional divisions: Current Plans, Current Operations, Intelligence, and Fusion. Planned improvements include the addition of the Advanced Planning System and the Tactical Information Situation Display (TISD).

**Modular Communications (MODCOM).** MODCOM, AN/TSC-132, will provide palletizable modular communications suites for a minimum Task Unit communications capability in situations when aircraft space is not available for full size Task Unit communications systems or where a Task Unit C3 Van is not applicable (i.e., Advance Control Element/Forward Control Element).

**Modular Control Equipment /Tactical Air Operations Module (MCE/TAOM).** A joint Marine Corps and Air Force program, MCE/TAOM is a modular, transportable, automated C2 system for controlling and coordinating employment of aircraft and surface-to-air missiles. It serves as an interface to receive, process, display, and transmit surveillance radar data. It receives inputs from search radar and Identification, Friend or Foe (IFF-systems) and performs automatic track correlation, acquisition, identification, classification, tracking, threat evaluation, and weapon selection, assignment, and control. It receives and processes track information, orders, command, and status data received via digital data links from other command and control systems, and from weapon systems with digital data link capability (TADIL A, TADIL B, TADIL C, Air Tactical Data Link (ATDL)-1, NATO Link 11, and JTIDS); processes inputs from operator consoles for entry, deletion or modification of stored information and initiating appropriate action both within the TAOM and external to the TAOM; and displays real time tactical air situation based on all system inputs. TAOM improves coordination and exchange of information among joint and combined Air Defense elements.

**Movement Reporting System Fleet Movement Report (MOVREP).** MOVREP collects data on the location and movement of ships in which the Navy has a direct interest available to certain authorities.

**Multidimensional Application Gbps Internet Consortium (MAGIC).** MAGIC is a gigabit Wide Area Network (WAN) which is a component of the Global Grid designed to provide commanders with a common view of the battlefield. For tactical C2 on the move the warrior will require small/lightweight equipment. DOD will need multiband and software reconfigurable antenna to help provide this capability for high capacity connectivity.

**Multifunction Radar Transponder System (MFRTS) (AN/PPN-19).** The AN/PPN-19 provides terminal guidance for off-set radar bombing, navigation, and air drops. It is a self-contained, man-portable unit (weighs about 32 lb.) designed to respond to aircraft radar interrogations with a coded information reply, transferring ground location information to aircraft. The AN/PPN-19's three-band capability replaces three transponders. Mission: Provide terminal guidance for aircraft, naval gunfire, and drop/landing zone location.

**Multilevel Security (MLS) TIP (MLS TIP).** The DOD MLS Program was established by OASD/C3I and the Joint Staff to accelerate fielding of MLS technology into command and control systems at the CINCs and other commands. MLS technology enables secure interoperability among systems that process data at different classification levels. True MLS technology will permit cleared users to access multilevel systems/data bases, but limit their access to data consistent with their clearance. Existing and near-term MLS technology enables access and interoperability across adjacent classification levels only (e.g., Top Secret to Secret but not TOP Secret to Unclassified).

**Multiple Engagement Module (MEM).** MEM models the attrition of US ICBMs and SLBMs against the Moscow ABM system. Combined Timing and Resolution (CT&R). This module examines and resolves potential SIOP conflicts for aircraft, cruise missile and ballistic missile missions. It applies timing and adjustments to provide safe separation between mission routes and planned weapon detonations. It resolves timing for any subset of SIOP missions. It also adjusts mission timing to provide safe separation between vehicles and weapons.

**Multisource Data Production System (CDPS) Multisource Data Base/Integrated Data Base (MSDB/IDB).** MSDB/IDB is the primary segment of the USSTRATCOM IDHS and provides automated support across the spectrum of intelligence disciplines. MIIDS is a shared database, compatible with DOD data element standards, and organized around installation and equipment data to permit automated support in each phase of the intelligence cycle.

**Multispectral Imagery and Materials Exploitation System (MIMES).** The MIMES provides the ability to analyze, manipulate and produce multi-spectral imagery source material and MC&G products to develop target materials tailored to user requirements (e.g., perspective scenes for aircrews). The analyst generates magnetic tapes for targeting personnel (using RTAPS) to produce area limitation studies and terrain categories; to produce products supplementing traditional

cartographic coverage or maps of previously uncharted areas for relocatable targets; and as automatic change detection to cue high resolution sensors.

**Multi-User Special Intelligence Communications System (MUSIC).** MUSIC provides an exchange of Special Intelligence Information. MUSIC is an automated communications system that interfaces existing communications networks and incorporates the ability to receive, screen, and relay SCI tactical intelligence support to operational commanders afloat and ashore automatically. It is a multi-format system, capable of processing data in a variety of formats. It can also establish exchanges of information among its subscribers.

**National Information Infrastructure (NII).** The NII includes more than just the physical facilities used to transmit, store, process, and display voice, data, and images. It encompasses a wide and ever-expanding range of equipment and software.

**NATO Air Base Satellite Communications (NABS).** The NABS is a US Air Force initiative to procure and install transportable SHF satellite ground terminals at European air bases to provide wartime primary, jam resistant communications for command and control of US Air Forces that have changed operational control to NATO. NABS terminals are also located at selected ACE air operations centers. NABS will use NATO SATCOM IV and will be under the control of the NATO Integrated Communications System (NICS) Central Operating Authority. There are two basic types of terminals: NABS "A" terminals provide one link with up to 2S50 tips per link and "B" terminals provide four links. The majority of equipment components and quick erecting antennas are common to the GMFSC program.

**NATO Integrated Communications System (NICS).** The NICS is composed of six subsystems: Initial Voice Switched Network (IVSN) to include secure voice; Telegraph Automated Relay Equipment Network (TARE); NATO SATCOM; NICS Data Network; NICS Secure Facsimile Network; and NATO Terrestrial Transmission System (NTTS).

**NATO Terrestrial Transmission System (NTTS).** NTTS is the replacement of the ACE HIGH transmission system. It uses host country national defense systems and PT Ts with NATO cross border links. NTTS is a single thread transmission system, gitted to provide redundant connectivity path and a switched capability for automatic restoration of transmission.

**Naval Aviation Logistics Command Management Information System (NALCOMIS).** An integral component of the Navy Tactical Command Support System (NTCSS), NALCOMIS is an on-line management information system supporting aircraft organizational and intermediate maintenance and material management requirements aboard aircraft carriers, amphibious aviation helicopter assault ships, Marine Aviation Logistics Squadrons, and Naval/Marine Corps Air Stations.

**Naval Intelligence Communications Systems (INTELNET).** The NICS is designed to consolidate Naval intelligence communications systems. The system has three parts. INTELCAST plan calls for each FOCIC or Facility to consolidate up to 12 different message traffic circuits, including OPINTEL, MUSIC, FIST, and DODIIS through INTELDATA future extensions. The INTELNET concepts calls for the creation of an SCI voice net capability similar to NSA's STICS/TRIBUTARY packages. INTELNET is to be installed in all SCI-capable ships, vans, and possible aircraft, and will be used in crisis action situations, special operations and contingencies.

**Naval Intelligence Processing System (NIPS).** The Naval Intelligence Processing System (NIPS) provides a comprehensive military intelligence data base which is used to support strike warfare, amphibious warfare, air operations, mission planning, and the command and control needs of the Naval and/or Joint Task Force Commander. It consists of a technical data base of friendly, neutral, and enemy systems and unit characteristics, orders of battle and capabilities. The NIPS system and its Central Data Base is an integral part of the Navy's NTCS-A/Unified Build Program and has been developed as part of the Navy's migration strategy in support of GCCS.

**Naval Oceanographic Data Distribution and Expansion System (NODDES).** NODDES will replace the obsolete Naval Environmental Display System (NEDS) and currently in use by the Naval Oceanography Command (NAVOCEANCOM) at its regional center, NAVEASTOCEANCEN. It will include the integration of DDN connectivity, will replace the Naval Environmental Data Network (NEDN) and allow NAVOCEANCOM to accomplish its mission. NODDES will meet all existing requirements for communicating grid fields and products from the primary production centers, the Fleet Numerical Oceanography Center (FNOC) and the Naval Oceanographic Office (NAVOCEANO), to the five regional centers, platforms afloat, and NAVOCEANCOM shore activities. NODDES will accomplish five concurrent functions of data collection; data assimilation; product generation; interpretation; and distribution. The NODDES will interface with the NTCS-A, HSFB, Antisubmarine Warfare Center Command and Control System (ASWCCCS), and local area networks.

**Naval Tactical Command Support System (NTCSS).** The NTCSS is one of two large C2 systems (the other being the JMCIS) in which the Navy's series of computer programs are being integrated. The program is designed to eliminate specialized computer and unique software, and to help to adopt standard software and computer hardware in line with DOD policy. The NTCSS will combine the programs used by shipboard logisticians to track supplies, oversee weapon maintenance and manage personnel. These programs include the Maintenance Resource Management System, the Naval Aviation Logistics Command Management Information System and the Shipboard Naval Automatic Data Processing Program.

**Naval Telecommunications System (NTS).** The NTS is a worldwide naval communications system for exchange of information between naval forces at sea, in the air, and ashore. It is controlled by four NCTAMS which have automatic switching

and message processing capabilities to provide the principal interface with the DCS for connectivity between shore commands and the fleet. This system provides transmission of fleet broadcast information on either HF radios or UHF satellite communications and the interface between shipboard and shore based voice, data, and imagery systems. NTS offers service from data rates of 75 words per minute with VLF broadcast to multi-kilobit rates. Connectivity is provided through FLTSATCOM, HF, and SHF systems.

**Navigation Sensor System Interface Program (NSSIP).** The NSSIP program, together with the OSS, NTSC-A and the Naval Command System Integrated Tactical Environment subsystem, comprise the JMCIS as part of the GCCS. The software program will emphasize the use of standards to achieve interoperability with other component of the JMCIS and the GCCS.

**Navy Command and Control System Ashore (NCCS) Ashore.** NCCS provides the primary command and control systems for Navy decision makers ashore. CINCUSNAVEUR is supported by this system. Its three major components are the Operations Support System, the Ocean Surveillance Information System (OSIS) Baseline Upgrade (OBU), and the Tactical Support Centers (TSCs).

**Navy Command and Control System Ashore (NCCS Ashore) Upgrade.** This project incrementally develops and upgrades three components of the NCCS Ashore system: the Shore Targeting Terminal (STT) Improvement, the Force High Level Terminal (FHLT) Improvements, and the Modernized NCCS Front End Processor (MNFEP). The STT and FHLT support Submarine Operating Authorities (SUBOPAUTH) and the ashore ASW Sector Commanders respectively while the MNFEP project is the communications processor supporting all NCCS Ashore nodes. Upgrades are required to support: increased data transmission rates, improved submarine fire control systems, expanded interface requirements, and replacement of antiquated 1960s systems. STTs support submarine force commanders in planning and directing submarine operations and promulgating surveillance data for OTH-T. FHLTs support ASW force commanders in executing maritime patrol and open-ocean reconnaissance responsibilities. FHLT systems provide message processing and organization aids, integrate own and hostile force information for situation monitoring and assessment, and planning and resource allocation aids.

**Navy Extremely High Frequency Satellite Communications Program (NESP).** NESP is the Navy's part of the tri-Service Milstar SATCOM program. Milstar will provide survivable wartime command and control communications for designated commanders and their assigned forces. The EHF SATCOM terminals will enable jam-resistant, low probability of intercept, minimum essential communications in hostile electromagnetic environments well into the next century. These capabilities are achieved through narrow bandwidth antennas, high effective radiated power, and extensive signal processing. Survivability of the system is enhanced by nuclear hardening of some of both the ground and the space-

based segments, distributed satellite constellation control, and space-based, computer-controlled, autonomous satellite cross-links. The system will also provide a jam-resistant EHF Fleet Broadcast uplink which will be automatically cross-banded in the satellite to a UHF downlink of parameters, allowing reception on current AN/SSR-1 satellite Fleet Broadcast receiving equipment.

**Navy Network (NAVNET).** NAVNET is a subset of the DISN-NT consolidation effort. It is a worldwide Navy network, comprised of 31 nodes. Long-haul connectivity is provided through the use of leased facilities, usually by T-1 trunks.

**Navy Tactical Command System-Afloat (NTCS-A).** NTCS-A is the primary afloat segment of the Navy Command Control and Intelligence System. It is a combination of hardware, software (applications), and personnel that is one of the pillars for the Navy's COPENICUS Architecture. NTCS-A is also an integral part of the Navy's Joint Maritime Command Information System (JMCIS) and uses the Navy's Unified Build (UB) core of command and control process applications. (UB Core: Incoming Communications Manager, Outgoing Communications Manager Graphics Manager, Tactical Plotter, and Tactical Data Base Manager). The system is operable, state of the art, and is based on a GOTS/COTS open architecture.

**Navy Tactical Data System (NTDS).** NTDS is an automated combat direction system developed to address the anti-air warfare problem by automating the shipboard combat information center. It is presently aboard over 200 active ships, including carriers, cruiser, destroyers, frigates, and amphibious ships. It is composed of various combinations of digital computers and associated data processing equipment, displays, and communications data links. Eventually NTDS is planned to be replaced by the Advance Combat Direction System (ACDS).

**NDL Integrated Data System (NIDS).** NIDS combines target island construction, DGZ construction and DGZ coding functions into a single interactive graphics system. Automated SIOP Allocation (ASA). ASA automates the allocation of ICBMs and SLBMs to targets.

**Newsdealer (supported by AUTODIN) (Newsdealer).** Newsdealer was developed to support the message switching needs of the CRITICOMM network. It provides for CRITIC, SI, and privacy communications dissemination. It has store and forward message switch capabilities similar to the AUTODIN that is used to handle sensitive compartmented information. The functions of message routing, intercept, alternate routing, and first-in/first-out by precedence, among others, are available through Newsdealer.

**Non-Cooperative Target Recognition (NCTR).** NCTR devices provide positive identification of aircraft for air defense weapons systems operators. They complement cooperative IFF systems and permit operations at extended ranges while reducing the risk of targeting friendly aircraft. The devices consist of a sensor, processor, and digital display deployed on an

individual air defense weapons system. Two models are in development. They will be integrated into the AVENGER, GBS, and HAWK weapons systems either individually or in combination consistent with battlefield requirements

**North American Defense System (NADS).** The NADS is a system of systems whose primary role is the detection of an attack upon North America, from Space, Air-breathing and Ballistic missile weapon systems. The Space Surveillance Network (SSN), the North Warning System and the PAVE PAWS systems are examples of components to the NADS. Warning of attacks are released from NORAD Hq through several support networks.

**NTCS-A/NCCS-A Integrated Tactical Environmental Subsystem (NITES).** NITES is being designed to operate within the Copernicus Architecture as a NTCS-A subsystem. Existing communications assets will be used to transmit highly-compressed, digital meteorological and oceanographic (METOC) data to virtually every platform. The user-friendly NITES software, which is embedded within the NTCS-A, will decode decompress, manipulate, and display this METOC data in a variety of forms, e.g., wind and seas warnings, radar refractivity conditions, and the location of oceanic fronts and eddies. NITES requires no trained oceanographers or aerographers either to operate the equipment or interpret the data products. The NITES frequently updated, high resolution database will be continuously available for automatic access by C4I, mission planning, and sensor/weapon performance assessment systems. Any workstation on the NTCS-A LAN will have access to the NITES data for tactical decision aid inputs.

**Nuclear Planning And Execution System (NPES).** The NPES provides an information database on nuclear weapons, supports nuclear planning and operations, and provides nuclear operations decisionmaking data. It also provides information on force readiness assessments, execution planning and monitoring, attack characterizations, residual threat assessments, force recovery, mission planning, and reconstitution support.

**Ocean Surveillance Information System (OSIS) Baseline Upgrade/OBU Evolutional Development (OBU/OED).** The OBU System is a shore-based, on-line, Automated, near- real-time netted command and control system. It receives, processes, and disseminates to the Navy and other services, at all levels of command, timely all-source ocean surveillance information on targets of interest above, under, and on the surface of the oceans.

**Office Automation Local Area Network (LAN)/Management Information System (OA LAN/MIS).** Provides for operations, maintenance, system administration and further implementation of the Unclassified and Secret administrative LANs supporting USSTRATCOM Manages Defense Data Network (DDN) connectivity for all USSTRATCOM agencies. Provides interface with air staff for program objective memorandum (POM) input and Offutt AFB administrative functions. Interfaces beyond the base gateway for world-wide information requirements. Supplies Headquarters automated data processing (ADP) training courses (mainframe and PC), ADP data administration, software engineering, software

and hardware security, common Ada compilers, commercial-off-the-shelf software development, and hardware and software maintenance. Supports all J-staff requirements for training on standard office automation equipment and applications development, modification and maintenance.

**Office Information System (OIS).** The OIS is a wide area network of office automation systems: computer hardware/software, terminals, printers, and file servers. The OIS is AMC's automation system/services to create, transfer, share, and present both command and control and office information electronically, using networked personal computers and commercial, off the shelf software. Specified users can configure their personal computers to access mission support command and control information. OIS is used throughout the entire staff, from the command section to the action officer and secretarial level. The OIS is a wide area network of office automation systems: computer hardware/ software, terminals, printers, and file servers. The OIS is AMC's automation system/services to create, transfer, share, and present both command and control and office information electronically, using networked personal computers and commercial, off the shelf software. Specified users can configure their personal computers to access mission support command and control information. OIS is used throughout the entire staff, from the command section to the action officer and secretarial level.

**Officer-in-Tactical-Command Information Exchange System (OTCIXS).** The OTCIXS provides two-way UHF SATCOM intra- and inter-battle Group communications links for teletype traffic and computer-to-computer targeting data. It is a battle group oriented C2 net for battle management and force coordination as required by the OTC. The network supports ship-to-ship high speed teletypewriter and tactical record RAINFORM GOLD exchanges, including event-by-event track updates and OPSNOTE narrative traffic.

**Officer in Tactical Command Information Exchange Subsystem II (OTCIXS II).** The principal purpose of OTCIXS II, a software package, is to rectify the shortcoming of the current OTCIXS network protocol not being DAMA compatible. OTCIXS II development is designed to provide subscribers with a communications network that will function in both DAMA and non-DAMA modes, while providing at least the equivalent of or better service than the existing OTCIXS. Like the present OTCIXS subsystems, this second generation enhancement of the OTCIXS network will provide suitably-equipped surface ships, submarines, and shore sites with the capability to exchange OTH-T information more efficiently.

**Operational Secure Communications (OPSCOMM).** OPSCOMM is used to provide analyst-to-analyst communications to meet operational requirements. Message traffic is normally conversational in nature. OPSCOMM is the generic name given to those intelligence communications circuits used to transmit information other than formal (formatted) messages. Its circuitry is used for man-to-man, man-to-machine, and machine-to-machine exchange of analytic data.

**Operations Support System (OSS).** It is a single, integrated, distributed C2 system utilizing NDI and COTS hardware, and wherever possible, software. The principal functions to be performed by OSS are to provide a real-time capability to receive, process, display, and assess readiness, warfighting capabilities and disposition of own and allied forces, and to manage the allocation of their resources, including communications gateways to the fleet commander, a significantly improved briefing and planning support and database management capability, and expert system enhanced decision and planning aids.

**OUTBOARD II.** OUTBOARD is an organic system that provides the operational commander with a real-time passive capability to detect, locate, track, and target hostile units at long range (OTH). OUTBOARD provides Fleet Commanders with an organic cryptologic sensor exploitation and resource management capability. OUTBOARD is procured in two phases. OUTBOARD I consists of a DF system, a Countermeasures (CM) Receiving System, a System Supervisor Station Communication Control Group (SSS), Local Monitoring Station (LMS), SI Communication Systems, including TACINTEL. OUTBOARD II is an upgrade to existing OUTBOARD I installations, consisting of an Automated Narrowband Acquisition, and SSS Modification Kit. The CM system, automated narrowband acquisition system, and LMS provide the basic signal detection and recognition capability. The DF system provides direction to assist in targeting. The SSS coordinates and directs the efforts of the OUTBOARD subsystems and provides an interface to the Combat Information Center (CIC) and to other offboard cryptologic systems such as OUTBOARD, COMBAT DF, SSES, and the HFDF BULLSEYE net.

**PAVE PAWS.** The mission of the PAVE PAWS system is to detect, track and identify SLBMs launched against the North American continent and provide warning data/assessment information to USSTRATCOM, NMCC and other user agencies. The system complements DSP (and future ALARM) by providing dual phenomenology of an attack. Dual phenomenology is the receipt of TW/AA information from two different sensor systems which are physically separate with totally different scientific bases. Dual phenomenology adds confidence to the decision makers that a single, system unique error is not providing a false alarm. This system is composed of several types of radars located around the periphery of the CONUS. PAVE PAWS includes four dual faced phased array radars (Cape Cod and Beale. AN/FPS-115) (Robins and Eldorado-AN/FPS-123) and associated equipment providing warning and attack assessment of an SLBM attack against the CONUS, Alaska and Southern Canada. The secondary mission is to provide warning and attack assessment of ICBM attack against the above areas. PAVE PAWS transmits this data directly to CMC, NMCC and USSTRATCOM.

**Personal Communications System (PCS).** The Personal Communications System is a new commercial service type which will exploit new telecommunications satellite technology. Small hand-held communications transceivers similar to current cellular

telephones will provide the warrior with immediate long-haul connectivity for paging, voice communications, and low capacity data transfers.

**Pilot Accelerated Architecture Acquisition Initiative System (PA3IS).** The Pilot Accelerated Architecture Acquisition Initiative (PA3I) System is designed to support improved connectivity and access to imagery-based intelligence products by both producers and end users. The PA3I architecture is being implemented as a pilot program at four intelligence centers: USCENTCOM (Building 213); DIA; USACOM; and NMJIC. Connectivity to the organizations supported by the four intelligence centers is provided through the Joint Worldwide Intelligence Communications System (JWICS) network, the Defense Information System Network/Secret Internet Protocol Router Network (DISN/SIPRNET), and the TROJAN Data Network. The PA3I project is a major step toward an open, distributed United States Imagery Systems (USIS) architecture that greatly enhances the ability to locate and exchange data. A guard capability permits the transfer of collateral and downgraded products from the SCI LAN to the Collateral LAN for access by the war fighter via the SIPRNET and TROJAN networks.

**Position Location Reporting System (PLRS).** Provides a portable means to assist in land navigation and simple (10 character) message transmission. Also provides the commander a means to determine subordinate unit location without reporting through normal channels.

**Processing and Display System (PDS).** The PDS is a component of the Cheyenne Mountain Upgrade (CMU) Command Center Processing and Display Subsystem - Replacement (CCPDS-R) program. The PDS will be a receive-only terminal device installed in all fixed primary and alternate command centers. This terminal will be capable of receiving correlated data from a correlation center, receiving direct sensor data from missile warning sensors, and processing and displaying the information. Communications will be provided via commercial landline the JRSC System, and Milstar. PDS implementation is planned to be concurrent with the implementation of CCPDS-R

**Psychological Operations Automated Data System (POADS).** POADS is an automated data base system to assist operations analysts research and plan missions. POADS provides: an all source document index, intelligence report summaries, psychological operations finished intelligence products, global radio and television data base, biographical information, and psychological operations assessments and studies. POADS also has a capability to correspond (send and receive) directly with other POADS users

**Range Standardization and Automation (RSA) Program.** The RSA will significantly improve the C4 infrastructure supporting launch operations. Limitations in communications bandwidth from downrange tracking locations require use of a process known as "strip-and-ship," whereby the customer Event messages generated by the ground stations are trans-

mitted over a dedicated Ground Communications Network (GCN) to the CCPDS computers located at the NMCC, the CMC, the USSTRATCOM Command Center, and to several secondary users. At USSTRATCOM, the CCPDS provides warning information by processing the surveillance data with force status and intelligence data. PCL Decision Time Remaining (DSNTR) is calculated and displayed. The ALERT is an advanced follow-on system to DSP.

**Rapid Application of Air Power (RAAP).** Provides the targeting database and software applications to support air combat targeting at the theater-level and below. It will support the Air Operations Center to develop, weaponize, and nominate targets for attack by air assets, and achieve the objectives of the commander's strategy. Two versions exist: one integrated into CTAPS at the AOC and an in-garrison version resident within sensitive compartmented information facilities.

**Red Switch Project (RSP).** This program provides automated secure voice service to command and control users at the NMCC, ANMCC, CINC Command Centers, and other key command locations.

**Regional/Sector Operational Control Center (ROCC/SOCC).** The ROCCs and SOCCs provide for surveillance, identification and control of aircraft in the North American, North Atlantic, and North Pacific airspaces. Operationally, all ROCCs and SOCCs in CONUS, Alaska, and Canada are directed by CINCNORAD.

**Rehosted CAFMS (RCAFMS).** Provides automation to the combat plans and combat operations divisions for the command and control system architecture in the JFACC to plan and execute the Air Tasking Order (ATO). Has the following capabilities: a) Construct, review, and disseminate the ATO; b) Generate operational mission schedules; c) Follow mission progress; and d) Monitor Modular Air Operations Center resources.

**Relational Analysis of Internettted Linkages Subsystem (RAILS).** RAILS provides the capability to load, display and manipulate the Air Force Electronic Warfare Center's CONSTANT WEB C3CM database. RAILS controls the actions required to maintain and exploit information related to the C3 of selected foreign powers. Most applications provide both textual and geographic depictions of units, communication networks and installation data including the capability to selectively print on-line displays and background reports. Analysts have the ability to perform MIIDS database maintenance and designated production tasks, carry out exercise/event analysis and develop critical node analysis processing (e.g., C2 network structure at any echelon, the chain of command for any unit at any level, all communications available to a C2 authority, etc.). This information is used to avoid C3 nodes or identify critical defensive C3 nodes which can be degraded by electronic jamming or targeting.

**Relocatable Target Area Planning System (RTAPS).** RTAPS provides automated support for tracking mobile land based ICBMs and other targets based upon fused, multi-source intelligence data concerning likely deployment areas. Analysts use RTAPS data for area limitation studies.

**Requirements Management System (RMS).** RMS is a redesign of the Committee on Imagery Requirements and Exploitation, Automated Management System, and Advanced Imagery Requirements and Exploitation System capabilities. It comprises a suite of Compartmented Mode Workstations and servers sized to accommodate the projected workload. RMS is the imagery component associated with the Collection Requirements Management System.

**Route and Penetration Evaluation System (ROPES).** ROPES is an integrated system providing automated penetration and attrition analysis for air breathing offensive weapon systems given the effects of the defensive environment. It supports tactics, threat and force application evaluation for SIOP, limited nuclear options, reconnaissance, contingency plans, war gaming and associated studies. ROPES includes the ability to process a single sortie, part of an attack option, or an entire attack option. It also provides for single sortie processing on-line, while batch processing can perform single or multi-sortie processing.

**Scalable Transportable Intelligence Communications System (STICS).** This NSA sponsored program is designed for ease of deployed communications. STICS is a lightweight deployable UHF SATCOM terminal (LST-5) secured by KY-57 cryptographic equipment. STICS will be used to connect the Joint Special Operations Task Force (JSOTF) and other SOF deployed elements, as required.

**SCAMPI.** SCAMPI is the principle C3I system for USSOCOM. Transmission of data between SCAMPI nodes is over a network of Defense Commercial Contracts Office (DECCO) leased, fiber optic, TI, wideband, commercial data lines. Secure voice and various data information are integrated into data streams using multiplexers and then secured with one or two levels of encryption.

**Sealift Strategic Contingency Planning System (SEASTRAT).** SEASTRAT provides MSC with the capability to develop movement tables rapidly from TPFDD inserted during the deliberate planning process. It also assists in the development of movement schedules for execution and performance of transportation feasibility analyses.

**Secondary Imagery Dissemination Systems (SIDS).** The SIDS is used to transmit, receive, and manipulate secondary imagery. Secondary imagery is received from national sources, processed by theater analysts, and disseminated to tactical users. Three specific systems are used by the preponderance of DOD tactical elements. The Portable Remote Telecommunications Systems (PORTS) is a PC-based workstation that provides image processing and text editing functions through a software interface. The Fleet Imagery Support Terminal (FIST) is capable of simultaneous transmission and reception of high-quality, digital imagery using secure UHF communications satellite or landline media. The Image Communications and Operations Node (ICON) is used to receive, enhance, analyze, and annotate color or black and white imagery for secondary dissemination to tactical elements.

**Secret Internet Protocol Router Network (SIPRNET).** Replaces the DSNET-1 in migrating to the DISN. It operates at the SECRET Collateral level and can interface with the TROJAN network. It provides higher and selectable data rates at a much lower O&M recurring cost. Inter-site data rates are 512 Kbps and in some cases T-1. Users can connect to the network at selectable data rates that meet the need.

**Secret Personal Computer Local Area Network (SPL).** The SPL provides a basic capability consisting of headquarters wide communications with standard software interfaces and applications. The SPL serves as a communication platform to distribute information, manage data, and coordinate positions in times of peace, crisis, and contingency operations. Communications include asynchronous connections to other similar networks, remote nodes, and DSNET 1. It offers electronic mail, database applications, staff automation tools, and standard office automation commercial off the shelf applications.

**Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T).** SMART-T is an Army EHF program for development of ground terminals to operate in the Milstar/EHF system. SMART-T will satisfy a critical need for an extremely reliable, extended distance, mobile, secure tactical communications capability. SMART-T will process data and voice communications at medium or low data rates. It will provide a range extension capability to the Army's MSE in support of Air-to-ground operations, specifically by providing an EHF SATCOM interface to permit uninterrupted communications as advancing forces move beyond the LOS capability of MSE. The SMART-T emphasizes rapid set up/tear down, and interface with the Army Common Users System, Army Data Distribution System, and commercial systems.

**Secure Telephone Unit 3<sup>rd</sup> Generation (STU-III).** The STU-III is a telephone desk set usable as both a secure telephone and an unsecure administrative phone for designated users of common user telephone systems. The STU-III is not compatible with the Advanced Narrowband Digital Voice Terminal or Digital Switched Voice Terminal except through a Red Switch. It can also be used as a data modem to connect secure facsimile machines or to connect remote personal computers to mainframes. The STU-III is compatible with the STU-II/B used by NATO.

**Secure Voice System (SVS).** The SVS program refers to the DCS system which uses digital secure narrow band voice technology to replace the old wide band AUTOSEVOCOM for greater efficiency and economy of transmission bandwidth. The Secure Voice Architecture (SVA) for STU-III and Defense Red Switch Network (DRSN) installations and connection is designed to provide a capability to meet requirements of the NCA and subordinate commanders under various war fighting environments. (See STU-III and DRSN). A third portion of the SVS, the Secure Conferencing Project (SCP), has been canceled.

**SENTINEL BYTE.** SENTINEL BYTE is an Air Force standardized architecture to link command C4I Systems at the unit level and to automate intelligence office functions. It establishes a secure network of computers among the USAFE Wing Operations Center, Alternate WOC, and Squadron Operations Centers. It passes intelligence, weather, and tasking information directly from the wing to each squadron for analysis and mission planning. Provides intelligence data base and software applications to support unit level air combat operations requirements, e.g., mission planning, pilot/aircrew pre/post mission briefings/debriefings, reporting, pilot/aircrew training interfaces with CTAPS and AFMSS, and provides full JDISS functionality at the unit-level. Provides secure intra-base connectivity between remote nodes on overseas sites and access to theater and force-level all-source threat databases. Will allow unit personnel to maintain order of battle and target information. Data formats conform with DIA's integrated data base transaction format (IDBTF). Directly receives near-real-time ELINT updates from CS. Allows the use of IMOM in supporting route planning with threat to terrain analysis.

**SHF Replenishment.** The SHF Replenishment program will supplement current DSCS communications capability through the development of modular satellites and communications packages. The modular satellites will carry any one of four payload designs on a medium launch vehicle to geosynchronous orbit. The four payloads are EHF, SHF, UHF, and crosslink packages.

**Shipboard Non-tactical ADP Program (SNAP III).** An integral component of the Naval Tactical Command Support System (NTCSS), SNAP III is a tactical support system that provides shipboard inventory management, financial management, maintenance data collection, equipment configuration control and administrative (personnel, medical, etc.) functions. SNAP III is being installed on all US Navy ships and submarines, and at deployable Marine Air Logistic Squadrons (MALs).

**Shore Targeting Terminal Upgrade (STT Upgrade).** The STT involves improvements to communications handling using a front-end processor and software developed by Naval Ocean System's Center, and a message processor (MP). Enhancements will accept messages formatted in OTH-GOLD, Joint Interoperability of Tactical C2 Systems, residual RAINFORM, and free-form operator OPNOTES from the MNFEP via an Ethernet interface. It provides for the Automatic Input Processing and other correlation routines that are to be off-loaded along with the positional calculation function. A virtual terminal concept will be implemented by establishing an Ethernet link allowing logical configuration changes. It will bring the STT to full Submarine Operational Command Center (SOCC) capability.

**Single Channel Anti-Jam Manportable Terminal (SCAMP).** The SCAMP Block I provides a manportable, secure, AJ, single channel low data rate EHF worldwide voice and data SATCOM terminal. This user owned and operated 30 pound terminal meets a critical need for C2 in an EW environment. The system operates in an intense jamming environment,

having LPI/LPD with interface to the Area Common User's System (ACUS). The SCAMP Block II will provide a manpackable 12-15 pound terminal to the tactical soldier.

**Single Channel Ground and Airborne Radio System (SINGGARS).** SINGGARS is a family of VHF-FM (30-88 MHz), frequency-hopping, jam-resistant, combat net radios which provide the primary means of C2 for infantry, armor, and artillery units. The SINGGARS system is designed on a modular basis to achieve maximum commonality among various ground and airborne system configurations. The SINGGARS family of radios has the capability to transmit and receive voice, tactical data and record traffic messages, and is consistent with NATO interoperability requirements. Developed by the US Army for voice and data communications, SINGGARS is being incorporated by the Navy into a HAVE QUICK/SINGGARS version of the AN/ARC-182 radio to provide interoperable AJ protection in the VHF-UHF bands using one radio (Combo Radio, designated the AN/ARC-210) for use in aircraft.

**SIOP and Red Integrated Strategic Offensive Plan Gaming.** The gaming uses a detailed, two-sided, interactive, strategic nuclear exchange model used to evaluate the SIOP. It simulates war plan execution using actual SIOP sorties against application of Red forces. Flexibility includes variations in force structure, timing and execution sequence. It produces a detailed summary of the outcomes of each weapon and weapon-system of both sides. It performs damage analysis for all target and probable casualty figures.

**SIOP Monitoring (SIMON).** SIMON is a laptop computer based information management system that provides weapon status information and sortie generation schedules to ABNCP battle staff members. The system includes capabilities for SIOP force status briefings and mapping functions.

**SOF-MOSS.** SOF-MOSS is a low-level, Communications Intelligence (COMINT)/ Direction Finding (DF) network. COMINT data will be automatically transmitted from the team level via a long-distance, LPVD link to a base station at the Forward Operating Base (FOB)/Special Forces Operating Base (SFOB) level. The analysis of the intercepted data will provide immediate threat information.

**SOF Intelligence Vehicle (SOF-IV).** The SOF-IV is a deployable, automated, multisource, near-real-time, intelligence system that is interoperable with theater Intelligence Data Handling Systems (IDHSs), SOF intelligence systems, and national assets. SOF-IV extends the capabilities of the Special Operations Command Research and Threat Evaluation System (SOCRATES).

**SOF Laser Acquisition Marker (SOFLAM).** Small, lightweight laser marker capable of marking point targets to 8 km for laser-guided bombs and range finding to 10 km.

**SOFTEC.** A system planning, management, and self-diagnostic technical control capable of automated testing, monitoring, and conditioning analog circuitry in support of JSOTF headquarters operations at theater-level. At a later date, SOFTEC will have a digital capability, standardized architecture to link command C4I Systems at the unit level and to automate intelligence office functions.

**SONATA.** SONATA is a composition of three major themes in support of the Navy's Space and Electronic Warfare (SEW), including global C4I. The "World View" is a global perspective of the changing nature of war and the Navy's response to it. The Copernicus Architecture provides a strategy for Navy to build a C4I system in the Information Age with new doctrine, organization and technical standards. A subset of the Copernicus Architecture is the Navy support to the GCCS. The Croesus Strategy addresses the problems of fielding information systems technology in the midst of changing threat, exploding technologies and declining budgets.

**Sound Surveillance System (SOSUS).** The SOSUS is primarily an ASW surveillance system which observes and tracks hostile underwater and surface threats by correlating sound signatures emanating from the targets of interest. The SOSUS is an important component of the overall Ocean Surveillance System.

**Space Defense Operations Center 4 (SPADOC 4).** USSPACECOM's SPADOC 4 will automate many space defense and surveillance functions and significantly improve the space control support SPADOC provides to combatant commanders. The MCCC will provide survivable communications/data processing upgrades for the MCCC. It provides core Automated Data Processing (ADP) and survivable communications. Communications improvements include DSCS/Jam-Resistant Secure Communications (JRSC) terminals, a Milstar Terminal and Control Element, and semi-automated communications control. ADP improvements include Battle Staff ADP which include missile warning, C2, space intelligence, and special activities processing. Phase II includes modular upgrades to include NUDET processing, terrestrial communications, remaining mission area ADP software, and a permanent garrison facility. Communications are being provided via commercial landline and the JRSC System.

**Special Intelligence Communications (SPINTCOMM).** The SPINTCOMM provides SI record and privacy traffic dissemination. It is a network of a dedicated family of circuits, terminals and facilities that serve the Special Security Office (SSO) functions at most major headquarters worldwide. SPINTCOMM traffic is generally switched by the local Streamliner processor and/or the nearest AUTODIN switch. It can process all precedence of traffic that include codeword, CRITIC and privacy messages, when so configured.

**Special Operations Command, Research, Analysis, and Threat Evaluation System (SOCRATES).** SOCRATES is the baseline USSOCOM Intelligence Data Handling System (IDHS) and provides a wide range of mission-directed, automated

intelligence and imagery support to USSOCOM, component headquarters, and USCENTCOM (in garrison). SOCRATES is projected for USSOCOM mission support units, theater SOCs, and forward-deployed SOF. SOCRATES is being extended in an SCI LAN Extension and Stand Alone capability configuration. The SCI LAN encompasses a full suite of SOCRATES equipment, including workstations, secondary imagery dissemination systems, and a mapping and graphics capability. The Stand Alone capability provides a work station with tailored data bases specific to unit operational orientation. Stand Alone capabilities are being provided to Guard and Reserve units as well as to certain active, lower-echelon units.

**Special Operations Forces (Data/Supply) Base (SOFBASE).** SOFBASE is an automated management system providing information on non-standard, low density SOF equipment, parts, and supplies using LANs and WANs. Supply functions include the ability to determine the availability of items maintained in joint operational stocks, as well as cost and repair histories of equipment. The system also provides the capability for electronic mail links through the SOF community.

**Special Operations Forces Planning and Rehearsal System (SOFPARS).** This is a USCINCSOC sponsored initiative to develop a computer based planning and rehearsal system that meets the unique requirements of the air, ground, and maritime elements of SOF. The system will provide a modular, automated and timely means of efficiently processing critical mission support data while enhancing the ability to respond to events worldwide in a timely and effective manner

**Special Operations Forces Tactical Assured Connectivity System (SOFTACS).** SOFTACS will field an integrated and balanced suite of communications systems designed to support the high-capacity, digital, secure, interoperable transmission and switching requirements of emerging SOF command, control, communications, computer, and intelligence systems. SOFTACS will provide significantly increased information transfer capability to deployed SOF.

**Standard Army Ammunition System (SAAS).** Provides the Class V (munitions) managers from plant (wholesale) to gun (retail) with the capability to optimize allocation and use of scarce logistical ammunition resources and to meet the needs of the tactical force commanders for planning during deployment, redeployment, reconstitution, retrograde, and airland operations. SAAS will be used by all ammunition supply related activities in the active Army, Reserve, and National Guard.

**Standard Army Maintenance System (SAMS).** SAMS is designed to automate day-to-day weapon system and subcomponent readiness status and maintenance information and management functions from the tactical Direct Support (DS)/General Support (GS) level maintenance/Aviation Intermediate Maintenance (AVIM) activities through the non-tactical installation/TDA activities to MACOM/Theater Maintenance program operations. It automates work request preparation,

management information reports and key Class IX supply functions. Requisitions, status and work order parts relationships are prepared automatically through the SAMS/SARSS interface.

**Standard Army Retail Supply System (SARSS).** SARSS is the Army's standard supply system for all retail users (e.g. active, reserve, national guard, and installation/TDA). It is an Army Acquisition managed wartime as well as a peacetime sustaining base system. It consists of interrelated, hierarchical modules, which operate at different management levels, in both tactical and non-tactical environments. SARSS provides standardized, automated stock record accounting and supply management for Classes II, III (Package), IV, VII, and IX (less COMSEC) within the theater of operations and CONUS.

**Standard Theater Army Command and Control System (STACCS).** STACCS is a peacetime and go-to-war system, primarily aimed at assisting a theater commander in the execution of crisis and wartime EAC sustainment and operational maneuver functions. STACCS also interoperates with the Global Command and Control System, sister services, multinational and ATCCS BFACs/ABCS and other command and control systems. Applications programs developed by AWIS, STACCS, and CSSCS(EAC) will provide the building blocks for the Army Global Command and Control System (AGCCS). It supports end-to-end force tracking, rear area theater Army operations, and theater sustainment functions. It uses packet switched technology for the wide area network, sharing common data bases and using Army standard hardware and software

**Status of Resources and Training System (SORTS).** SORTS provides information concerning the status, location and readiness of US worldwide military units. It provides for the registration of each unit of the US armed forces and many other foreign and domestic agencies.

**STRATCOM Command and Control System (SCACS).** This system includes all key components of the command's C2 network. Elements include the command center, ABNCP, CMAH, planning centers, communications systems, etc.

**STRATCOM Intelligence Network (SINET).** The SINET serves as the backbone communications network between all components of the STRATCOM IDHS. It provides high speed secure, local area networking (data) and associated value-added capabilities (print/plot, graphics, mail, file server, etc.) for USSTRATCOM intelligence projects and interfaces. It provides communications with the external intelligence community via the DSNET 3 portion of the DDN. SINET provides for future growth to allow distributive processing and control the operation of intelligence data flow beginning at interface units and gateways that separate the host, work stations, LANs or other local sub-networks from the SINET and server/segment hardware and software. It is secure at the Top Secret SCI system high level.

**Strategic Automated Command and Control System (SACCS).** The SACCS is a dedicated, secure, day-to-day data network that collects, processes and displays information and disseminates operational directions to USSTRATCOM assigned force wing command posts and missile LCCs. SACCS is the primary data system (in a benign environment) for the dissemination of USCINCSSTRAT's force survival and PCL messages. Additionally, SACCS provides USSTRATCOM, USTRANSCOM and ACC the capability, in a non-stressed environment, to receive force status record data in NRT for analysis and display. The system provides automated information submission assistance; high speed secure transmission, either by its own dedicated 4800 bps circuitry or via the AUTODIN; automatic message routing, to include IEMATS messages; automatic message processing; and automated information display, either on wall screens or work station displays. The system processors, in addition to providing an interface to IEMATS and the AUTODIN, interface the USSTRATCOM CCPDS and its follow-on replacement; portions of the SWPS, including the SIOP; and the WWMCCS.

**Strategic Deployment System (STRADS).** STRADS enables MTMC to rapidly retrieve, process, analyze, and monitor data associated with mobilization and deployment for planning purposes and during military operations. It allows MTMC to conduct transportation analyses of OPLANs, provide automated interfaces with other transportation systems, and assist in the development of closure estimates and execution monitoring.

**Strategic Mating and Ranging Program (SMARP).** SMARP plans the bomber front-end and supporting tanker sorties to meet mission fuel demands given an initial force and resource position.

**Strategic Mission Data Preparation System, Phase III (SMDPS III).** SMDPS III programs consists of four major projects: the Nuclear Planning and Production System (NMPPS), consisting of hardware and software to replace the SMDPS II systems at B-52/B-1B Main Operating Bases (MOBs); the Deployable Strategic Mission Data Preparation Shelter (DSMDPS), to support Secure Reserve Force (SRF) taskings and trans-/post-SIOP taskings at Alternate Reconstitution Bases (ARBs); a B-2 Mission Planning System; and the Conventional Mission Planning and Production Software. SMDPS will be implemented in three segments: Segment-I provides new hardware and software to SAC B-52 units, a deployable SMDPS for ARBs upgrades to unit aircraft tanning process, and secure connectivity from HQ SAC to units. Segment-II provides totally automated mission planning and production capability for B-1B and B-52 units to include real time weather updates. Segment-III provides complete mission planning and production.

**Strategic Operations Conference System (SOCS).** The SOCS is a dedicated, non-secure, day-to-day voice C2 system designed to provide the primary means for transmitting time sensitive voice information between HQ USSTRATCOM, its battle management elements and assigned forces. In a benign environment, SOCS is the primary voice system for the dissemination of USCINCSSTRAT's force survival and PCL messages. Most subscribers have direct dial capability as

well as connectivity assistance from a SOCS controller interface. The SOCS includes and provides: a rapid means of communication between control agencies at all levels of command, voice backup capabilities, access to airborne assets and interfaces to other communications networks, both commercial and military. In addition to DSN and the public voice networks, SOCS can be extended through unit command post UHF radio systems, unit commander's intrabase radio networks and ABNCP ground entry points. The SOCS hosts the Missile Potential Hazard Network, the Aircraft Emergency Conference and various command conferences prior to disruption due to enemy attack. SOCS also supports other USSTRATCOM systems by furnishing network connectivity. Examples are the Strategic Mission Data Preparation System (SMDPS), the Strategic Training Center Network and the USSTRATCOM Digital Imagery Transmission System (E-DITS). Although SOCS is a non-secure network, SOCS can easily interface with STU-III secure telephone for point-to-point voice and data communication.

**Strategic Sealift Contingency Planning System (SEACOP).** SEACOP provides MSC with the capability to develop movement tables from the TPFDD inserted during the deliberate planning process. It assists in the development of movement schedules for execution and performance of transportation feasibility analyses.

**Strategic Tactical Entry Point (STEP).** The STEP program is designed to establish a standard set of C4I services (networks) and equipment at selected earth terminals to support the CJTF and component forces. The primary purpose is to provide a seamless interface between strategic and theater/ tactical users by using a combination of SATCOM and terrestrial telecommunications resources. The C4I service include: AUTODIN/DMS; CTAPS; DISN; JDISS; MILNET; AND GCCS. DSCS earth terminals are being upgraded with up/down converters, multiplexers and baseband equipment to increase tactical connectivity.

**Strategic War Planning System (SWPS).** SWPS consists of a series of software modules/programs that are located on TRICOMS and used in developing a strategic war. This system is linked together through the SIOP Local Area Network (SIOP LAN). A number of war planning processes are performed that include: develop targets, DGZ construction, weapon allocation, missile/aircraft application, reconnaissance planning, war gaming, attrition analysis and timing/documentation. At the conclusion of this process, SSBN data is disseminated to Dahlgren, VA and aircraft/missile sortie data is distributed to bomber, reconnaissance and ICBM units. Bomber units must develop Data Transfer Unit Cartridges (DTUCs) for programming weapon systems and build combat mission folders to assist the aircrew in flying the mission.

**Strategic Weapons Planning System (SWPS).** Required to develop, validate and produce the single Integrated Operational Plan (SIOP) the nation's nuclear war plan and related products. SWPS is a fully operational system in a contiguous state of change, as a result of changes in the international environment and realignment of US domestic Priorities.

**Streamlining Of Information Service Operations Consolidation Study (SISOCS).** SISOCS is a subset of the DISN-NT consolidation effort. It is designed to be a CONUS-wide Army network that is used to evaluate ways to streamline the Army Materiel Command's data processing techniques, centers, and operations. Formerly, streamlining was accomplished by the use of four major Automated Information Processing Centers (AIPCs). Seventeen additional remote data processing installations are being interconnected to the four major centers. Long-haul connectivity will be provided through leased facilities. T-1 trunking will be used for connectivity.

**Submarine (SLBM) Adaptive Targeting System (SATS).** SATS is a PC based TRIDENT I and TRIDENT II SLBM mission planning system. The functions included in SATS are footprint generation and sequencing, achievability and fratricide testing, EAM message generation and Range Arc construction. SATS provides the user the capability to plan sorties, patterns and Special footprints. In addition to these capabilities, SATS can generate an EAM message worksheet for FGD replanning missions.

**Submarine Retargeting System Data Link (SRSDL).** The data link provides a direct communications link between USSTRATCOM and NSWCDD, and between NSWCDD and the SSBN CTFs. The data link provides the capability to increase the overall speed of the retargeting process by eliminating any dependency on external communications centers. The SRSDL supports transmission of normal targeting message traffic as well as large databases. Use of accredited encryption devices allows processing to TS SIOP-ESI data. The result is a capacity to automate the exchange of time critical information.

**Surveillance And Control Data Link (SCDL).** SCDL is a highly jam resistant, modular, LPI surveillance data link for the US Army and Air Force JSTARS system. Its primary function is to transmit surveillance data on enemy ground forces far behind main battle lines from the aircraft to Army and Air Force battle management systems on the ground.

**Surveillance Towed Array System (SURTASS).** The SURTASS is a seaborne system which augments the SOSUS and other Ocean Surveillance Systems. It is used in the general location of suspected target activity to better track and characterize targets of interest.

**Survivable Communications Integration System (SCIS).** SCIS is an automated communications and message processor that will use multiple communications media to provide survivable, timely, reliable, and error-free delivery of critical missile warning information between sensor sites, correlation nodes, and forward users through stressed communications environments. The SCIS will eliminate duplicate messages upon receipt. The communications media includes JRSC, Commercial High Speed, and Milstar.

**Synchronous Optical Network (SONET).** The SONET is at the heart of the future national and international Information Systems. The trunking capacity for a single trunk has been standardized to the Gbps range which will pass interactive full motion high definition, time division multiplexed video with other voice and data services. (Note; the current telecommunications T-1 trunk operates at a speed of 1.544 Mbps.) The heart of the DISN objective architecture is the BISDN service which will emphasize the use of SONET technology and services.

**System Planning Engineering and Evaluation Device (SPEED).** Provides the Fleet Marine Forces with the capability to rapidly engineer tactical communications systems, providing a means of evaluating system performance prior to installation.

**Tactical Air Operational Module (TAOM).** TAOM is a modularized, transportable, automated, air C2 system capable of controlling and coordinating a full range of air defense weapons, including surface-to-air missiles and interceptor aircraft. A joint Marine Corps and Air Force program, the TAOM will improve the capabilities of the Marine Corps Tactical Air Operations Central (TAOC), the Air Force CRC, and Forward Air Control Post (FACP). The basic element is the TAOM AN/TYQ-23 which is housed in a standard 20 foot shelter containing all mission-essential equipment (except air search radars and electrical power). Each TAOM is fully mission capable. System capacity is increased by connecting up to four TAOMs via fiber-optic cables. Maximum system capacity, with the exception of operator positions, can be obtained with three TAOMs. The TAOC/CRC/FACP is responsible for the detection, identification, and intercept of hostile air threats. The TAOM will accept inputs from up to four search radars, and digital data links with other TAOMs as well as other Service's and allied air C2 systems. It processes this information and provides the operator with a real-time tactical situational display. The TAOM also has the capability to recommend best weapon systems for engagement based upon target position and weapon availability.

**Tactical Aircraft Mission Planning System (TAMPS).** Current legacy, aircraft-unique ("stovepipe") unit level mission planning systems are being integrated into TAMPS as the Navy/Marine Corps standard unit level aircraft mission planning system. These legacy systems may include the Tactical EA6B Mission Support System (TEAMS), Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES), Common Helicopter Aircraft Mission Planning System (CHAMPS), AV8B Map, Operator, and Maintenance Station (MOMS), VIPER (ES3) and the V22 and H53 mission planning systems. TAMPS will complement the other service common mission planning systems (Air Force Mission Support System (AFMSS) and Army Aviation Mission Planning System (AMPS)).

**Tactical Combat Operations (TCO).** An automated Commander/Operations Officer terminal. Supports the development of courses of action and preparation and dissemination of operational orders and overlays.

**Tactical Data Information Exchange Subsystem A Phase IV (TADIXS A Phase IV).** TADIXS A Phase IV will provide ocean area and interocean area communication of OTH-T data from shore subscribers to subscribers on afloat platforms using the existing FLTSATCOM resources and dedicated terrestrial connectivity. Shore gateways will interface with other shore gateways, with each gateway being a subscriber in the adjacent satellite footprint. Each gateway will pass received messages that are addressed to a different satellite footprint from one gateway to the other for retransmission to afloat units in its own FLTSATCOM footprint. The TADIXS subsystem was designed to provide the capability to broadcast TDP data-link traffic on a one-way transmission path from shore sites to fleet-based Navy Cruise Missile Combat Support Systems. The upgrade provides fully redundant, automated gateways at all NCTAMS and at NAVCOMTELSTA Stockton.

**Tactical Data Information Exchange System (TADIXS).** The TADIXS is used to broadcast OTH-T data to the fleet. It provides one-way shore-to-ship broadcast of tactical targeting information via a computer-to-computer communications link. The primary communications means is UHF SATCOM. Information transmitted over TADIXS A includes the ocean surveillance product addressed to designated naval combatants being supported by fleet intelligence.

**TACTICAL DATA LINK A (TADIL A) LINK-11).** Also known as NATO Link 11, TADIL A is a netted, two-way, real time, encrypted data link which uses half duplex HF and UHF communications circuits (as well as shipboard UHF satellite circuits) for computer to computer data interface to pass track information management data, command and control information, and status data among up to twenty Navy, Marine Corps, and Air Force net participants. TADIL uses a star net topology with discrete transmit but full receive connectivity.

**TACTICAL DATA LINK J (TADIL J)-(LINK 16).** TADIL J/NATO Link 16 is the two-way, node less, encrypted, anti-jam digital voice and data link used for JTIDS. The technical functions are those normally included in tactical C3 systems. The half-duplex links will be used for the exchange of real time or near real time data on activities which include air/ground/maritime (surface and subsurface) surveillance, electronic warfare, and intelligence among Army, Navy, Air Force Marine Corps, and NATO units. Up to one hundred and twenty eight units may participate in each net; up to one hundred and twenty eight nets are possible. Use of TDMA allows the link to provide data over its 300-mile nautical range without mutual interference by other users. TADIL J uses spread spectrum and fast frequency hopping techniques, transmits the same information on two successive pulses, and provides a powerful error correction scheme which allows reliable data transmission even if half of the pulses are lost. Transmission characteristics and standards are contained in JCS Pub 6-01.1 and NATO STANAG 5516.

**Tactical Environmental Support System (TESS).** TESS provides secure, responsive, and endurable environmental support tailored to specific mission requirements of Navy tactical commanders ashore and afloat. TESS integrates data com-

munications, processing, and display technologies to provide Navy commanders with timely and accurate environmental support, including assessments of the effects of the environment upon specific platforms, sensors, and weapons systems. TESS receives data from satellite sensors, NAVOCEANCOM shore activities, GENSER messages, direct operator entry, local sensor systems, and data records. TESS will be deployed on 35 major combatants and at 27 shore sites. Its modular computer system functions as the afloat operational air/ocean master database for the BG. TESS will exchange data with C4I and combat systems in order to provide atmospheric and oceanographic data. This data will be used to make assessments and predictions of these conditions on BG, friendly, and enemy units, sensor, weapons, and communications systems.

**Tactical Information Broadcast Service (TIBS) Network Data Link System.** The TIBS network uses a UHF secure digital and secure/unsecure voice link, via SATCOM or line-of-sight, to transmit SIGINT data from RIVET JOINT to TIBS Interface ground data link terminals or the TSART. Although data linking ELINT has priority, the TIBS link can be used to transmit SIGINT reports as a backup to the RJ tactical communications media and also to obtain new or timely inflight tasking or mission redirection from authorized tasking agencies via the terminal's secure voice capability.

**Tactical Receiver Equipment/TRE-related Application Data Dissemination System (TRE/TRAP Data Dissemination System) (TDDS).** TDDS satisfies a multi-service operational requirement for the near real time global dissemination of time sensitive (e.g., threat emitters) surveillance and intelligence information. TDDS provides ELINT-oriented data from remote national sensors to specific users in support of worldwide tactical and strategic missions, focusing on over-the-horizon targeting data. Current user equipment for TDDS includes Navy TRE, Army Commanders Tactical Terminal Hybrid Receiver (CTT-H/R) and SUCCESS radio, and the Air Force/USSOCOM Multi-mission Advanced Tactical Terminal (MATT).

**Tactical Reconnaissance Intelligence Ground Station (TRIGS GPF).** The TRIGS GPF is the ground processing facility for airborne tactical reconnaissance. The airborne platform (e.g., TR-1) uses a Commanders' Tactical Terminal (CTT) for connectivity to the ground station and to other airborne platforms in the CTT network. This provides long range line of sight propagation path to/from intelligence producers and consumers with the possibility for air-to-air relay of data. The CTT network has the following capabilities: Total communication connectivity; Simultaneous secure data and voice; frequency agile-HAVE QUICK compatible; Anti-jam capable; Full duplex UHF data link using TDMA, FDMA protocol; Lightweight Airborne relays for reliable LOS connectivity; and full MIL-SPEC Tempest certified Field terminals.

**Tactical Satellite Communications (TACSATCOM).** TACSATCOM is an expression commonly used to refer to US military UHF satellites: AFSATCOM and FLTSATCOM. For day to day operations, non-Navy users are limited to AFSATCOM. The AFSATCOM system provides reliable, enduring, worldwide command and control communications to designated

SIOP/nuclear capable users for EAM dissemination, JCS- CINC inter netting, force direction, and force report back. Additionally, AFSATCOM service is provided to a limited number of high priority non-SIOP users for operational missions, contingency/crisis operations, exercise support, and technical/operator training. The AFSATCOM and FLTSATCOM systems operate in the UHF frequency band and provide low data rate communications (16 kbps or less) for highly mobile airborne, ship borne, and man pack terminals. All UHF satellite requirements for JCS-directed OPLANs will be included in deliberate planning except FLTSATCOM channels for fleet broadcast, FLTSATCOM channels for submarine information exchange, and AFSATCOM regenerative channels for SIOP forces and theater nuclear forces. There are four basic satellite systems used to provide AFSATCOM/FLTSATCOM service; Fleet Satellite Communications (FLTSATCOM), Leased Satellite Communications (LEA SAT), Satellite Data Systems (SDS), and UHF Follow-On (UFO) satellites.

**Tanker Mating and Ranging Program (TMAPP).** TMAPP schedules allocated tankers to support time-phased deployments of mission aircraft from their main operating base to forward locations.

**Target Development Support System (TDSS).** Target development is the identification, selection, classification, coding and prioritization of installations into the NTB. The installations are selected and coded for inclusion into the NTB using rule-based software. These rules are written as statements into the TDSS by the target analyst based on national guidance, internal command guidance and analysis performed by the targeting staff. Coordination throughout the staff ensures guidance is being adhered to and informs other functions of new or changed items.

**Technical Architecture Framework for Information Management (TAFIM).** The TAFIM provides the integrated guidance that governs the evolution of the DOD's technical infrastructure. It provides the services, standards design concepts, component and configurations which can be used to guide development of a technical architecture that meet specific mission requirements. The TAFIM is independent of data and mission specific applications and forms the foundation for introducing and promoting interoperability, portability, and scalability of DOD information systems. Proper application of TAFIM will: Ensure integration, interoperability, modularity and flexibility; Guide acquisition and reuse; and Speed delivery and lower information technology costs.

**Telegraph Automatic Relay Equipment (TARE).** As part of the NATO Integrated Communications System (NICS) Stage 1 program to improve voice and message switches, the TARE network has been established as an automatic store and forward message switching system consisting of stored program-controlled switches. The TARE switches are installed at or near major NATO headquarters in Europe, Canada, and the US in hardened or protected facilities. In addition, a TARE switch is located at Latina, Italy to train engineers, operators, and site technicians. TARE switches are interconnected with approximately 50 interswitch trunks and are capable of low speed (50-300 baud) and medium speed

(600-2400 baud) data rates. Some sites are provided with EMP protection. Medium-speed lines and interswitch trunk circuits are protected by digital on-line cryptographic equipment, while low speed lines are encrypted with NATO inventory equipment. The NICS TARE serves both authorized military and political elements of NATO. Designated TARE facilities interchange traffic with telegraph networks of NATO member nations including the US DCS/AUTODIN network. The TARE network can process all classifications of messages, including COSMIC TOP SECRET and special category messages. It recognizes four levels of precedence (Flash, Immediate, Priority, and Routine) and processes messages in order of precedence.

**Terminal Management System Export/Import (TERMS E/I).** TERMSE/I records cargo data for surface movements at MTMC area commands; receipt, staging, and loading cargo at ports; and generates the ship manifest upon completion of loading. TERMSE/I will be replaced by the Worldwide Port System.

**Theater Army Medical Management and Information System (TAMMIS).** TAMMIS is an automated, on-line, interactive microcomputer system designed to assist commanders by providing timely, accurate, and relevant medical information. It was developed to manage the medical information of field medical units during peace as well as war. TAMMIS tracks patients and manages medical information at Table of Organization and Equipment field medical units in the corps and echelons above corps. It provides support to the following four functional areas: Medical Patient Accounting and Reporting, Medical Patient Regulating, Medical Blood and Blood Products Management, and Medical Logistics.

**Theater Avoidance Mission Planning System (TAMPS).** TAMPS is Navy/USMC automated Mission Planning System which was used successfully in Operation Desert Storm. It helped provide common perception through a common threat data base. From the data base one could identify a site and look at its complete history. It could see patterns in target changes. Close to real time data was based on pilot BDA. It effectively supported the deconfliction function. Air crews used the system directly and were supported by a backup team. It was deemed an essential tool in combat operations.

**Theater Exploitation of National Capabilities (TENCAP).** TENCAP is an intelligence program designed to enhance support to the deployed warrior on the battlefield by providing intelligence information which was obtained by national technical means. Traditionally strategic data will be tailored and made readily available to the deployed forces. Emphasis is on information which is complete, accurate and current, and responsive to the warrior's needs.

**Theater Extension Network (TENET).** The TENET, a component of the Global Grid program, provides for a significantly expanded communications capability for the future GCCS. TENET is developing technology to provide a secure and survivable

network that extends military communications to those warfighters that cannot be reached by commercial links. It is one of Global Grid's advanced technology demonstrations, which focus on creating a jam-resistant, seamless, gigabit communications architecture. It uses existing network technology to demonstrate that commercial communications infrastructure leased by DOD can effectively extend command and control capabilities to any location around the world. The Services' existing and planned communication systems, like Milstar network, will be critical elements that will fit into the Global Grid network as receivers and transmitters of signals.

**Tomahawk Strike Coordination Module (TSCM).** Designed to enhance the effectiveness of cruise missile and aircraft strike warfare, the computer-based TSCM is intended to correct mission planning and coordination deficiencies uncovered during the Persian Gulf conflict. The TSCM will permit planners to closely integrate strikes on enemy targets via a variety of weapons systems, including attack aircraft and cruise missiles. Also included will be the capability to map out multiple routes to selected targets to reduce the danger posed to strike aircraft. By collating data from different sensor and intelligence surveillance systems, the TSCM would display a coherent, tactical picture that will significantly reduce the time required to plan coordinated strike operations.

**Topographic Set (TOPO SET).** A shelterized unit that can create special maps and digital mapping products tailored to a specific mission.

**Transport Coordination Automated Information Move System (TC AIMS).** A system that provides the MAGTF Commander with an automated capability to plan, coordinate, manage, and execute MAGTF movement from the point of origin to the air and sea POE, and from the Point of Debarkation (POD) to the final destination.

**Transport Operational Personal Property Standard System (TOPS).** TOPS, a MTMC system, automates the processes and procedures for the movement and storage of personal property for military members and DOD civilians worldwide. It provides the processing and communications necessary for source data automation, ensuring the accuracy and timely exchange of information between personal property offices and finance systems.

**Transportation Command Regulating and Command and Control Evacuation System (TRAC2ES).** TRAC2ES is a GTN prototype being developed in parallel with other parts of GTN. It will provide global C2 support for patient regulating and evacuation. The requirement for TRAC2ES is based upon directions issued to USTRANSCOM from DOD.

**Transportation Coordinator-Automated Command and Control Information System (TC-ACCIS).** TC-ACCIS, a Department of the Army system, provides selected US Army Installation Transportation Officers with the capability to maintain current unit movement data, generate rail load plans, and generate bills of lading. It is the Army version of TC AIMS.

**Transportation Financial Management System (TFMS).** TFMS, a fully integrated system, will handle all Defense Business Operations Fund. Transportation financial requirements to include personnel, payroll accounting, and management information functions. It will ensure the operational, financial, and management requirements of USTRANSCOM and the TCCs are met. TFMS must handle detailed information from three different TCCs which are currently using Service specific systems. TFMS should allow timely access to information with the capability for ad hoc reports which can be pulled by the Office of the Secretary of Defense, USTRANSCOM, and the TCCs.

**Transportation Management System (TMS).** Enables improved knowledge and control of cargo movement and provides the ability to track, audit, certify, and provide payment for all billings received from the movement of USMC freight, personnel, and personal property shipments. TMS is an on-line application utilizing leading edge technology for timely transactions in the transportation environment. TMS's use of EDI enables communication with the carrier, other regulatory agencies, the supply requester, and the payment center in a completely automated mode, completing the cycle through prepayment audit, voucher certification, and EFT capabilities.

**Transportation Reporting and Inquiry System (TRAIS).** TRAIS, an AMC management information system, processes transportation data received from CAPS cargo ports worldwide. It provides command transportation management information used to plan allocation of resources and analyze system performance.

**Tri-Service Tactical Communications at Army EAC's (TRI-TAC).** The TRI-TAC equipment provides mobile communications services for COMMZ tactical forces. The combined TRI-TAC and MSE programs comprise the Army Common User System (ACUS). The TRI-TAC equipment supports the rear areas in support of a Joint Task Force or Army Hq and provides a bridge between the DCS and deployed combat forces. It is normally deployed in a grid structure consisting of switching nodes interconnected by high data rate digital troposcatter radios.

**TROJAN.** Provides a seamless strategic-to-tactical communications system for Army intelligence support to the warrior. The TROJAN Data Network uses a multi-level secure multiplexer that permits the transmission and receipt of both SCI and Collateral traffic. It provides service to nearly any place in the world provided that satellite connectivity at the proper bandwidth and power are available.

**UHF SATCOM Terminal System (USTS).** The USTS is an Air Force developed, portable EHF/UHF satellite terminal providing portable, DAMA data and voice communications services for airborne users, fixed ground installations, and transportable elements. USTS terminals may be carried on board C-5, C-130, and C-141 aircraft, mounted for use during flight, and then removed for use on land, on mobile systems, or left on board the aircraft as required. USTS features include TDMA for shared use of 5 and 25 KHz channels on existing and planned satellite transponders, inter

operability with US Navy FLTSATCOM 25 KHz users, a DAMA protocol to increase the availability and connectivity over TDMA, automatic multi-hop routing, support of multi-hop broadcast and point-to-point services, and line replaceable unit (LRU) commonality between the terminals and the Net Control Stations (NCS) to simplify the architecture and enhance supportability.

**Unified Local Area Network Architecture (ULANA).** ULANA provides an integrated family of LAN components for building tailored local data networks. The components are based on non-proprietary open systems standards and architectures such as the TCP/IP. They provide a migration path to OSI and GOSIP compliance for TCP/IP users.

**Uniform Internet Protocol Router Network (NIPRNET).** The NIPRNET is the consolidation of several service/agencies networks (e.g., AFNET, NAVNET, MILNET) with common protocols and standards. It is a product of the DISN Near Term Program which sought a reduction in cost of operation through interoperability and standardization. Connectivity over high speed trunking is supported by the NIPRNET. It operates at the unclassified level, while the SIPRNET supports classified networks in a similar manner.

**Unit Diary System/Marine Integrated Personnel System (UDS/MIPS).** A microcomputer based, fully deployable, personnel data input and report generating system. UDS uses an off-line process to create and transfer unit diaries through the appropriate processing center to update the Marine Corps Total Force System (MCTFS), a central database resident in the Finance Support Activity, Kansas City Center.

**Unit Level Logistics System (ULLS).** ULLS is a tactical Standard Army Management Information System (STAMIS) which is managed under the Army Acquisition Executive structure in accordance with DOD Directives 8120.1 and 8120.2. All battlefield logistics automation begins with ULLS. ULLS automates organizational level supply, maintenance, property accountability, readiness and unit status reporting functions in tactical units for the active Army, the Army National Guard, and the Army Reserve in both peace and war time. ULLS allows commanders to effectively manage and allocate resources, it simplifies soldiers' tasks, it reduces transaction errors, it reduces order-ship time and it helps identify and report materiel excesses.

**United States Imagery System (USIS).** The USIS is the means by which classified and unclassified imagery can be passed around the intelligence community. There is an interface between the Image Product Archive (IPA) and the USIS using the System II Receive Element. This interface can feed source imagery into the USIS standard exploitation systems which can, in turn, send its image products to the IPA for storage. This interoperability is made possible by the fact that the Receive Element provide interfaces which adhere to the USIS architecture standards

**United States Special Operations Command Local Area Network/Wide Area Network (USSOCOM LAN/WAN).** The LAN/WAN supports data transfer between the USSOCOM HQ, the USSOCOM Washington Office, Special Operations Command Europe, United States Army Special Operations Command, Air Force Special Operations Command, Naval Special Warfare Command, and Joint Special Operations Command. The LAN/WAN serves multiple purposes to include providing improved ADP to the USSOCOM HQ and the command and control of assigned forces.

**Universal Modem.** The Universal Modem is a joint Service program to provide interoperable SHF voice and data satellite communications in jamming and nuclear scintillation environments. The Universal Modem will replace the JRSC USC-28 Modems.

**Unmanned Aerial Vehicle (UAV).** UAV is a remotely piloted vehicle that can be operated via ground control or preprogrammed for autonomous flight with a capability for mid-flight reprogramming. Several types that differ in cost, range, and mission are being developed by the Joint Program Office. UAVs can provide reconnaissance target spotting, battle damage assessment (BDA), and chemical agent detection. By loitering over an area, a UAV can also provide a means for tactical ground communications. UAVs can carry still cameras, electro-optical, IR, radio frequency, and imagery sensors; forward looking IR; electronic countermeasures; and support measures. Plans also call for certain UAVs to carry the ATARS. Near-real-time information transfer from UAVs is usually accomplished by data link or video transmission.

**USACOM Theater Intelligence Network (LATIN).** The LATIN consists of the IDHS hub located in the AIC, subordinate command IDHS hosts nodes, and personal computer (PC) LANs. LATIN is interconnected via the DSNET3, dedicated encrypted circuits, or via commercial telephone circuits using STU-III encryption. LATIN operates in the system high mode at the TOP SECRET-SCI level. The IDHS provides an accessible intelligence integrated data base (IDB) coupled with data and message processing capabilities. Intelligence information retrieval is available the USACOM Automated Message Processing System (LAMPS), which also provides automated access to national or other command intelligence systems via DSNET3.

**USCINCEUR Command and Control Center System (UCCS).** The UCCS began as an upgrade to develop and integrate new and existing command and control systems to provide USCINCEUR with a responsive, operational command and control capability during peacetime, crisis, and wartime situations. The goal is to integrate operational, intelligence and logistic information into an automated C2 information system. Capabilities include: USEUCOM decision support system; automated message handling system; briefing and display system; electronic map graphics and map archive system; UHF radio upgrades for USEUCOM crisis satellite communications systems; underground protected distribution system; Top Secret UCCS local area network (LAN); EUCOM Intelligence Support System (EISS) LAN; two way

interface with WWMCCS; one way interfaces with STACCS-Europe and JOTS; and an initial network monitor and control system.

**VERDIN.** The VERDIN broadcast is a submarine force multichannel broadcast that is of two hours duration for each broadcast schedule. It operates on VLF/LF, providing up to four channels of 50 baud rate by use of time division multiplexing (TDM). The channelization for each transmitting site is unique to that particular site, as the VERDIN channelization is composed at each transmitter facility by insertion of the individual channel keystore provided by the Broadcast Control Authority (BCA).

**Washington Area Wideband System Phase V (WAWS-V).** The WAWS will extend a bulk-encrypted, digital wideband, terrestrial communications system to link Northwest, Chesapeake, VA, with Washington, DC. WAWS supports such Norfolk, VA subscribers as USCINCLANT, CINCLANTFLT and components, Supreme Allied Commander, Atlantic (SACLANT), NSA, and other Tidewater, VA area subscribers having access requirements with subscribers in the Washington, DC area.

**Wide Area Surveillance Tracking and Targeting System (WAST2).** WAST2 is a "system of systems" designed to obtain synergy among the various strategic surveillance and tracking systems within the DOD. The objective collection of systems is designed to track space platforms, air-breathing platforms, surface and underwater platforms, and terrestrial mobile platforms. The collection of systems seeks to collate data from acoustic, electromagnetic and visual sources into a composite picture of the target, its state, and attributes.

**Wing C2 System (WCCS).** The purpose of WCCS is to automate unit battle staffs and key work centers, tying them together in a network. This system, operational with the tactical air forces, adds increased capability associated with force reporting, generation and oversight. WCCS provides information management and decision support to unit-level air operations commanders. Using a single, secure command and control data base and a survivable, distributed network covering all vital support activities, WCCS provides information from all unit support areas to assist the Wing Commander and his staff in making critical decisions and maintaining effective management of battle resources.

**Worldwide Military Command and Control System (WWMCCS).** The WWMCCS provides the means by which the President, Secretary of Defense, and senior military commanders may receive information pertaining to the need for action by US Military forces and disseminate their decision and orders to those forces. It supports not only the day to day management of the Armed Forces, but is also capable of controlling US forces in a crisis and wartime situations. It consists of five elements: communications, warning, executive aids, command facilities, and data collection/ processing. It comprises those

systems which assure secure and reliable communications between the NCA, the JCS and the unified and specified commanders. It supports the NCA in the execution of the SIOP and other time sensitive operations.

**Worldwide Port System (WPS).** WPS will be establish a single integrated system to replace four different types of computer systems that currently support the worldwide MTMC and Forces Command terminal management and cargo documentation missions. It will be the primary source for ITV and Total Asset Visibility of surface cargo movement in the DTS both in peace and war. WPS will replace DASPS-E and TERMS E/I.

**WWMCCS Allocation Assessment Model (WAAM).** WAMM is a computer program developed and maintained for the Defense Information Systems Agency for strategic command, control, and communications study, analysis and evaluation.

**WWMCCS Intercomputer Network (WIN).** WIN (also known as DSNET 2) is a command and control capability used daily to support operational requirements and provide command, control, communications, and intelligence (C3I) information that enhances the readiness posture of the DOD. It consists of a centrally managed information processing and exchange network consisting of large-scale computer systems at geographically separate locations, interconnected by a wide band, packet switched communications subsystem (DSNET 2). WIN facilitates sharing and exchange of critical command and control information between unified and specified commands. It is designed to serve the corporate information needs of the NCA, and JCS, CINCs, and Services by enhancing continuity of operations, sharing common information, sharing ADP resources, and exchanging command and control information up to the TOP SECRET level through employment of KG-84 COMSEC devices.

# Section III

## C4 Systems Diagrams

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# C4 Systems Diagrams

This section is presented to aid in understanding relationships between overview C4I programs presented in twelve categories in Section I of this volume and more detailed individual system networking as presented in Volume I, C4I Global Assessment. It provides alternate views of connectivity as an aid in appreciating the relationships among DOD C4I programs and their evolution to and objective architecture for the 21st century.

## Defense Information Infrastructure (DII)

- DII Existing Tactical Architecture for Ground Forces
- DII Communications View
- Deployed Combined/Joint Task Force

## C4I for the Warrior (C4IFTW)

- Mobile Subscriber Equipment (MSE) Program
- Tri-Service Tactical Communication (TRI TAC)
- Enhanced Position Location Reporting System (EPLRS)
- Joint Tactical Information Distribution System (JTIDS)
- Navy Tactical Data Systems (NTDS)

### **Global Command and Control System (GCCS)**

- GCCS Site Implementation Status
- Core ATM/DS3 Leading Edge Infrastructure
- Army Migration Systems
- Navy Migration Systems
- Air Force Migration Systems

### **Global Grid**

- Global Grid Creating a C4I Global “Infosphere”
- Global Grid Phase II, FY 96-97

### **Defense Information Support Network (DISN)**

- DISN Goal Architecture
- DISN T-3 Network Hub Sites
- DISN Deployed Baseline
- Notional DISN Deployed Transport Infrastructure

### **MILSATCOM**

- SATCOM Connectivity Overview
- SATCOM Connectivity for Air Operations Centers
- Army Common User System (ACUS) Requirements for DSCS
- DOD Commercial SATCOM Network and User Topology

#### **Joint Reconnaissance, Surveillance, and Intelligence (RSI)**

- US Air Defense Surveillance System
- Aerostat RADAR Coverage
- Worldwide Notional JWICS Topology
- Imagery System Coverage
- Tactical Situation Awareness
- CTT System Architecture
- Intelligence Terminal Connectivity

#### **CINC's and Joint Task Forces**

- Representative USSTRATCOM Communications Systems
- IADS  
Special Operations Forces Architecture
- Representative USPACOM JTF

#### **Future Objective Architecture**

- Future Global Grid Architecture
- Air Force Target Local Information Transfer Architecture
- TRI-Band Joint Concept of Operations

**Strategic Other**

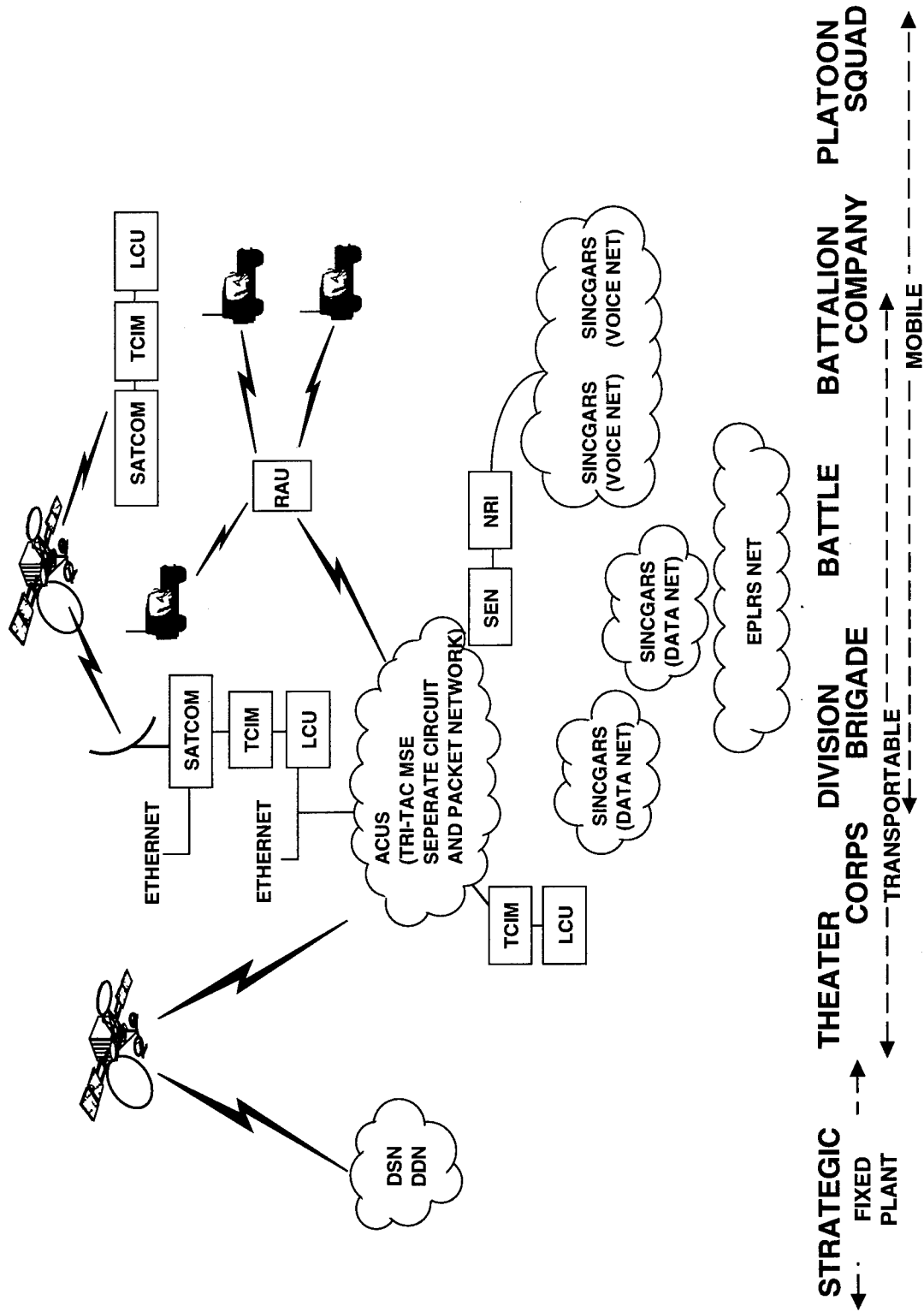
- Fleet Satellite Broadcast System
- Submarine Satellite Information Exchange System (SSIXS)
- Jam Resistant Secure Communications (JRSC)

**Tactical Other**

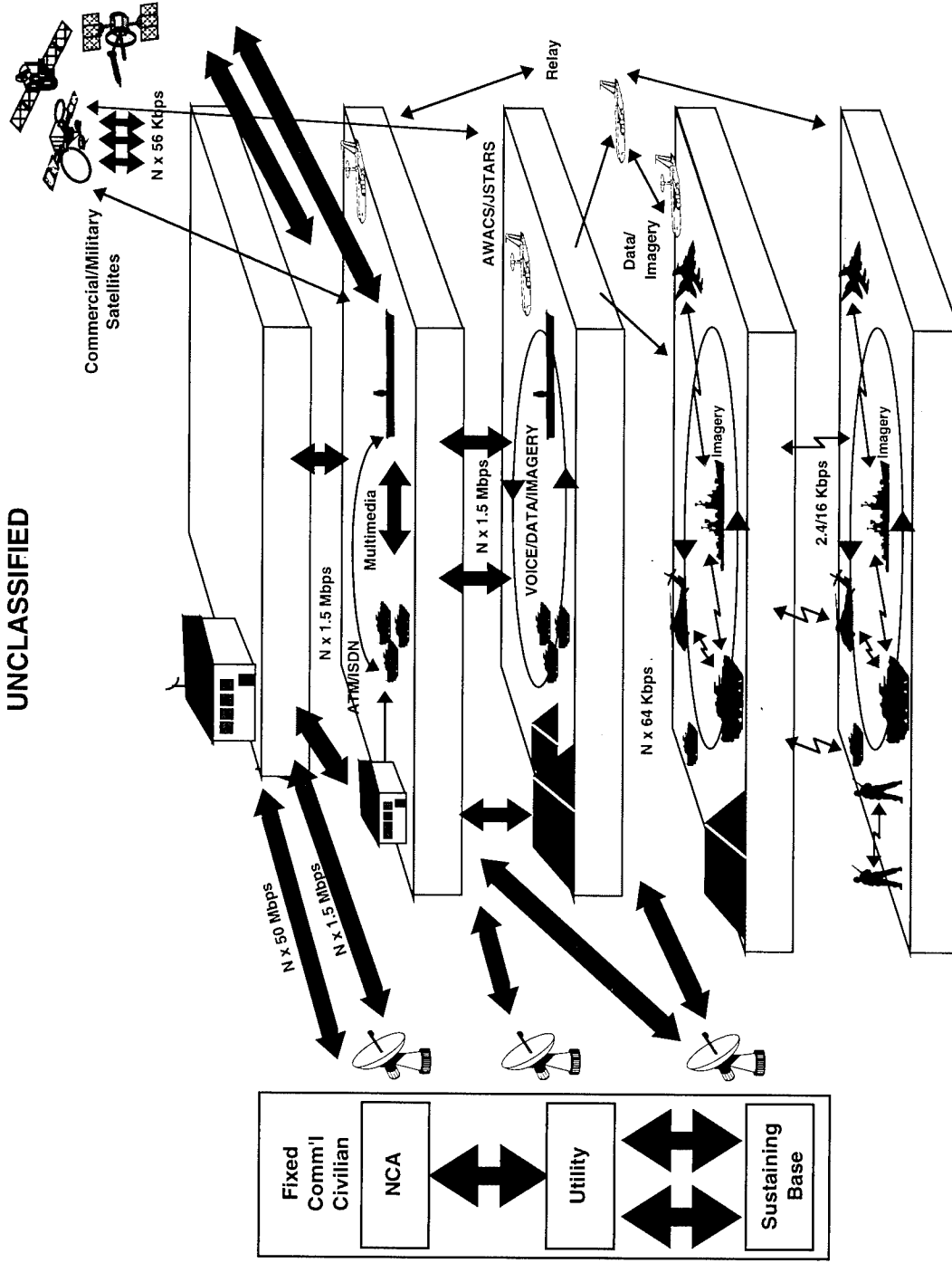
- Tactical Air Warfare Communications
- Air Warfare Concept of Employment
- Officer-in-Tactical-Command Information Exchange -OTCIXS
- Army Mobile Area Communications

# DII EXISTING TACTICAL ARCHITECTURE FOR GROUND FORCES

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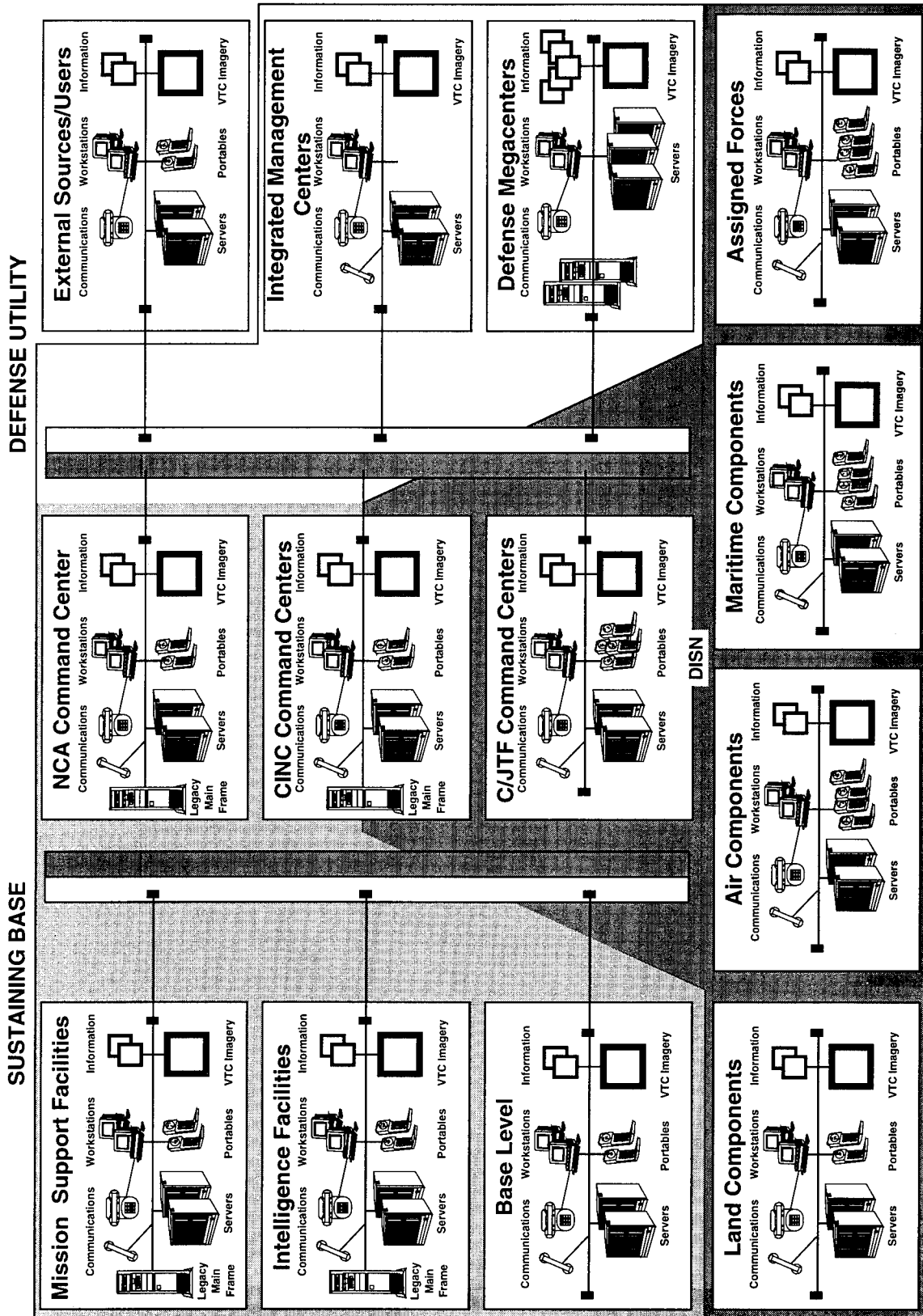


# DII COMMUNICATIONS VIEW UNCLASSIFIED



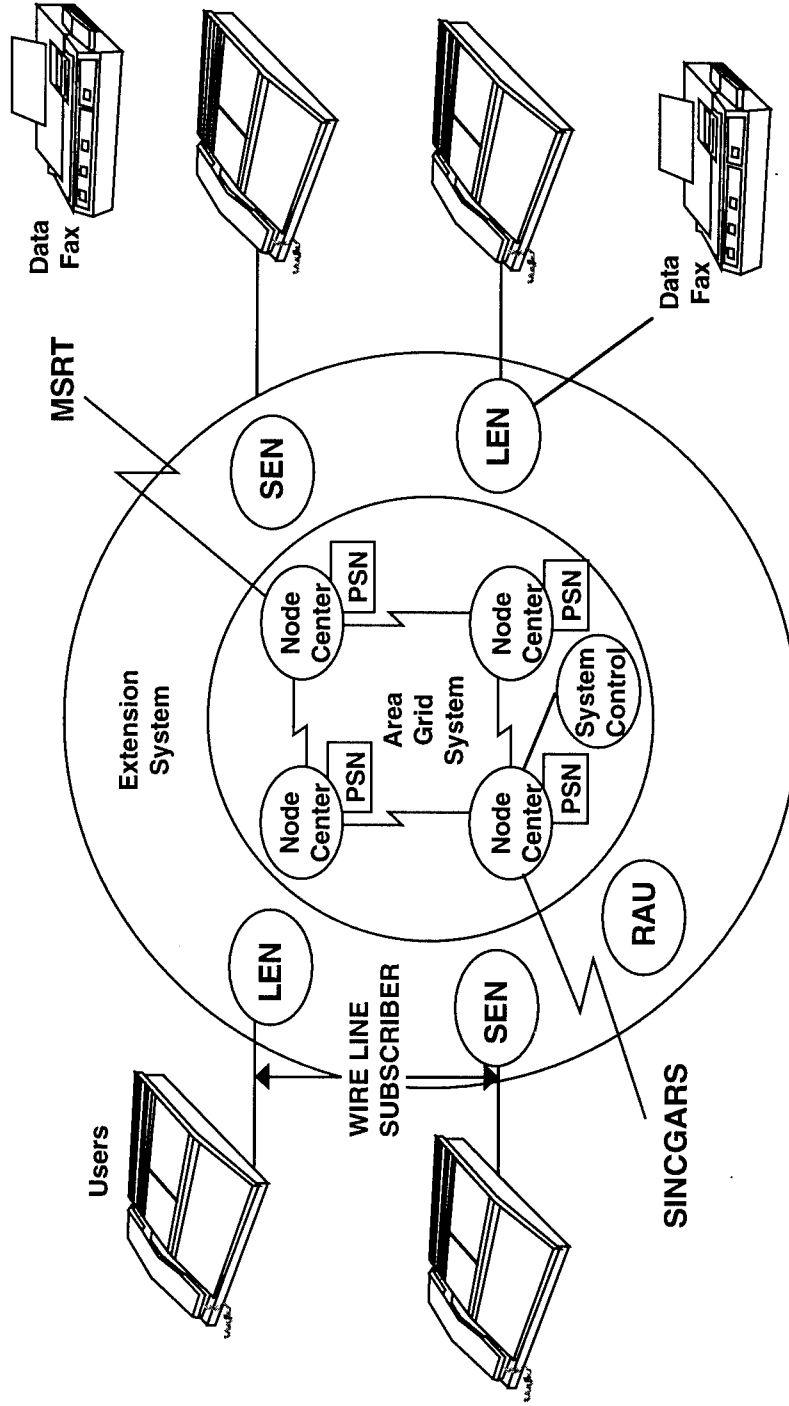
# DEPLOYED COMBINED/JOINT TASK FORCE

UNCLASSIFIED



# MOBILE SUBSCRIBER EQUIPMENT (MSE) PROGRAM DATA

UNCLASSIFIED

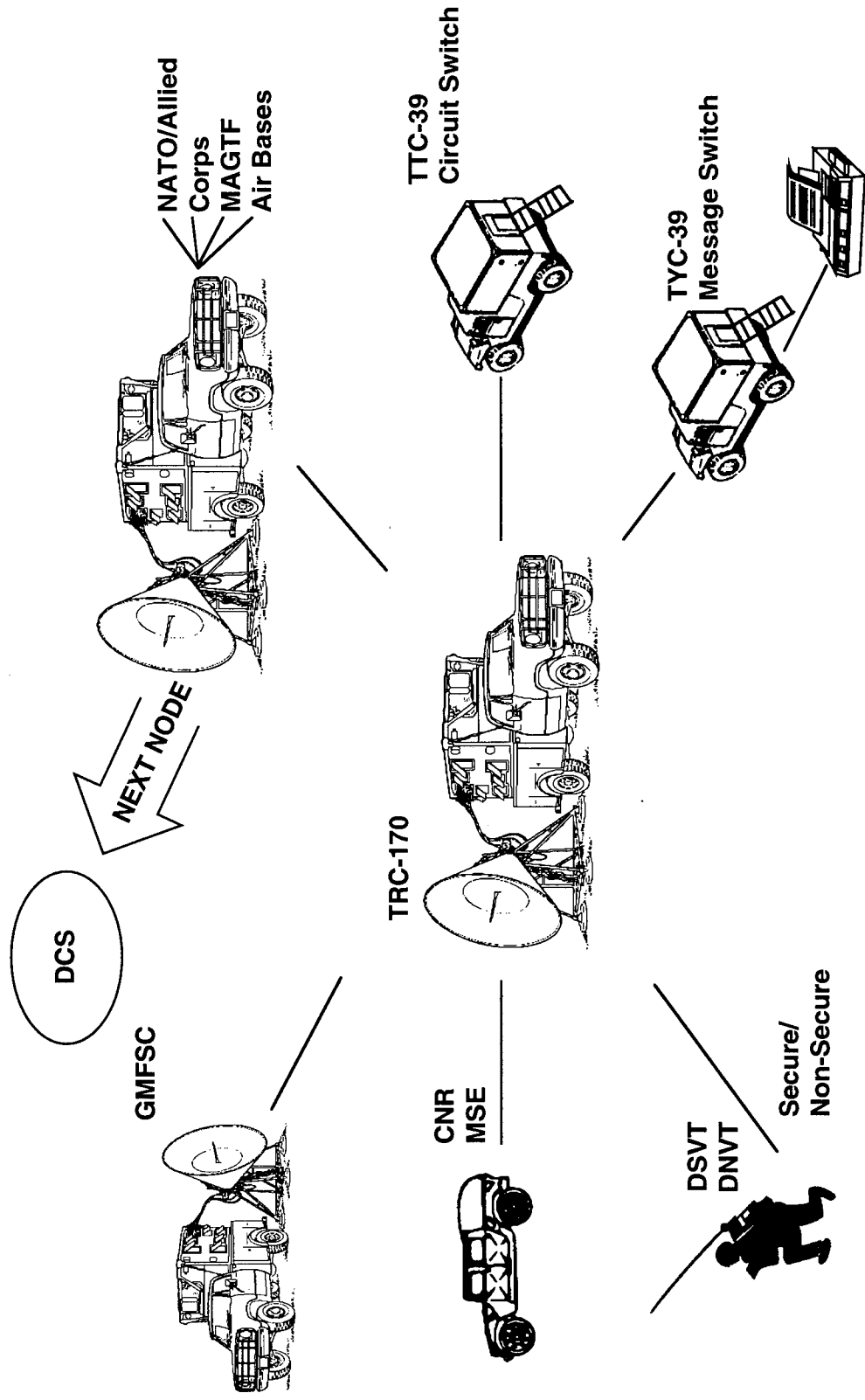


- LEN - Large Extension Node
- SEN - Small Extension Node
- RAU - Radio Access Unit
- PSN - Packet Switch Node

Echelon	MSE Nodes
Division	4
Corps	22

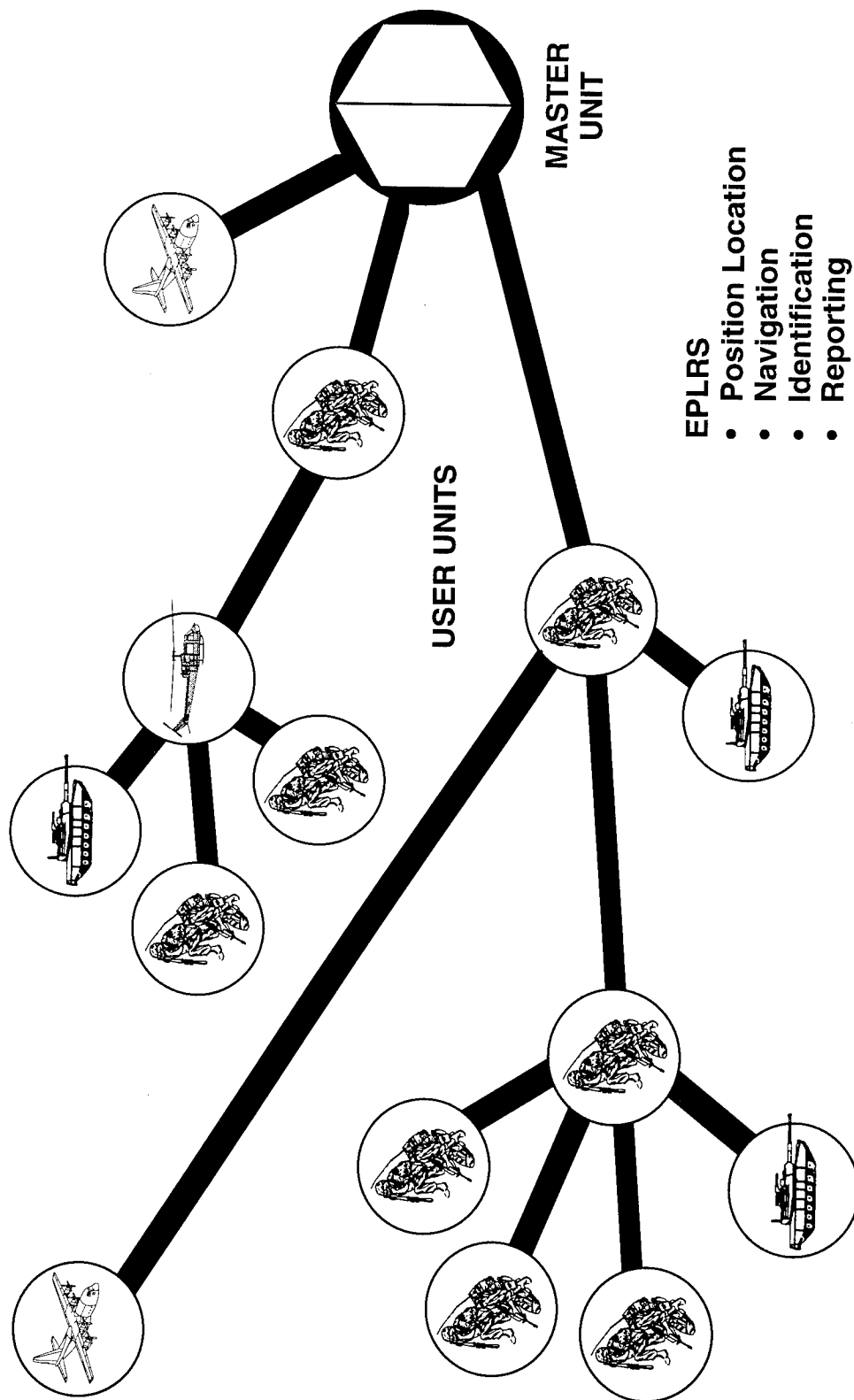
# TRI-SERVICE TACTICAL COMMUNICATION (TRI-TAC)

UNCLASSIFIED



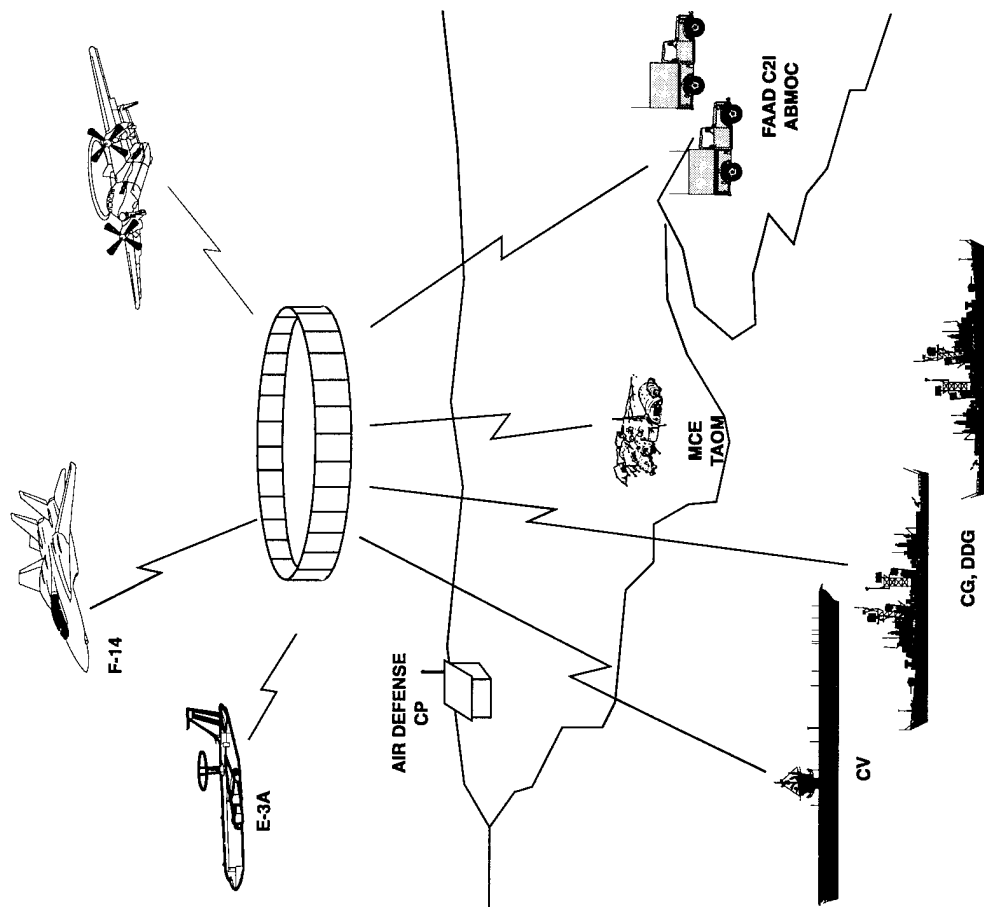
## ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

UNCLASSIFIED

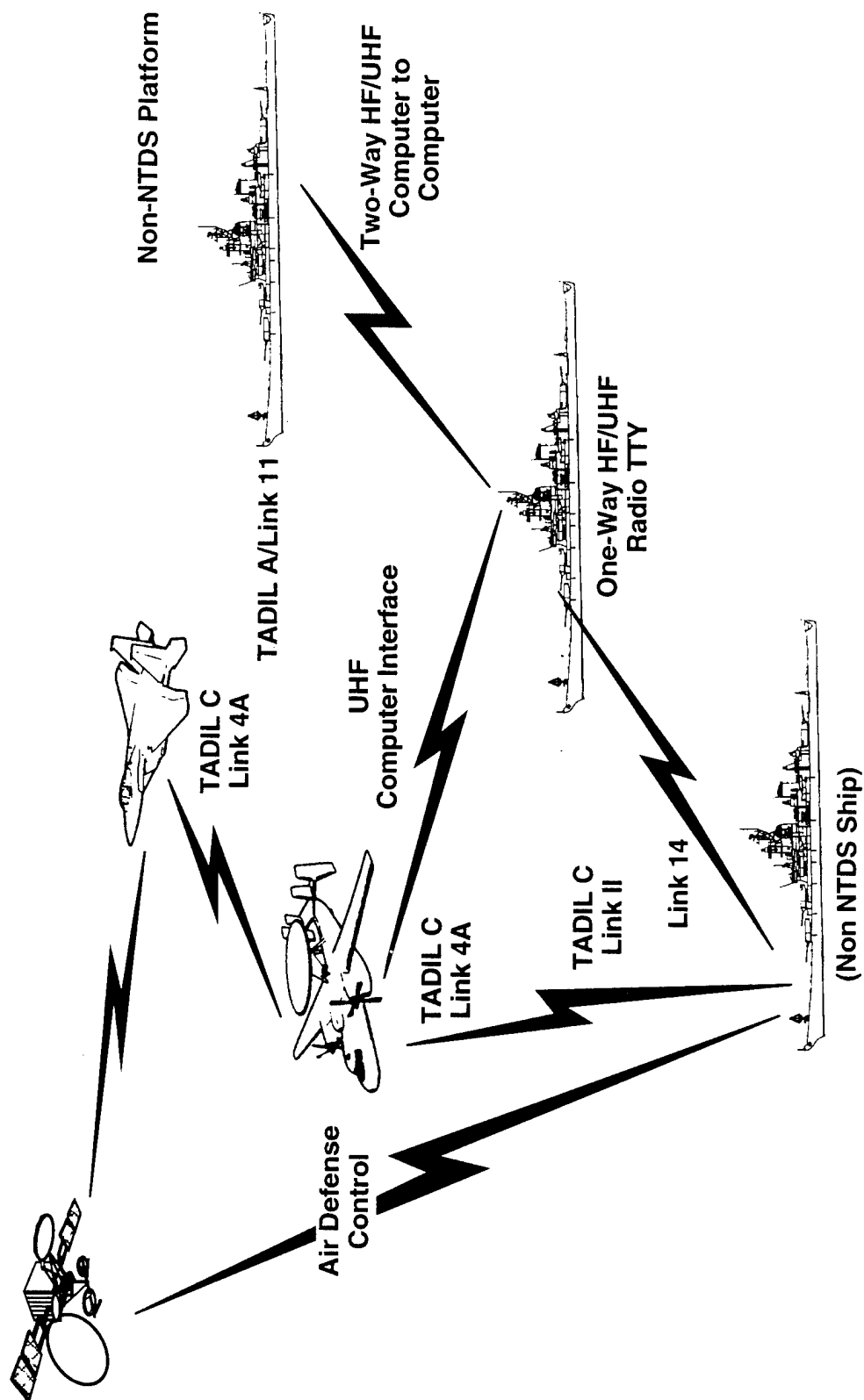


## JTIDS EMPLOYMENT

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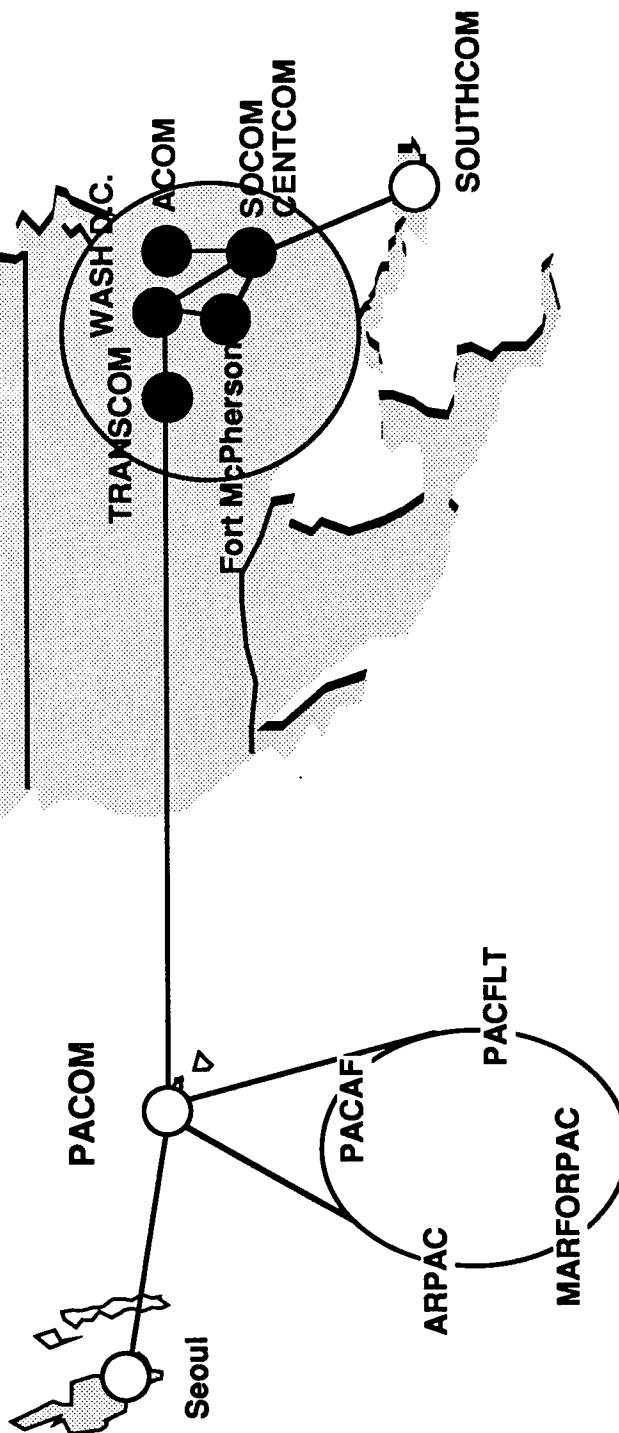
**UNCLASSIFIED**



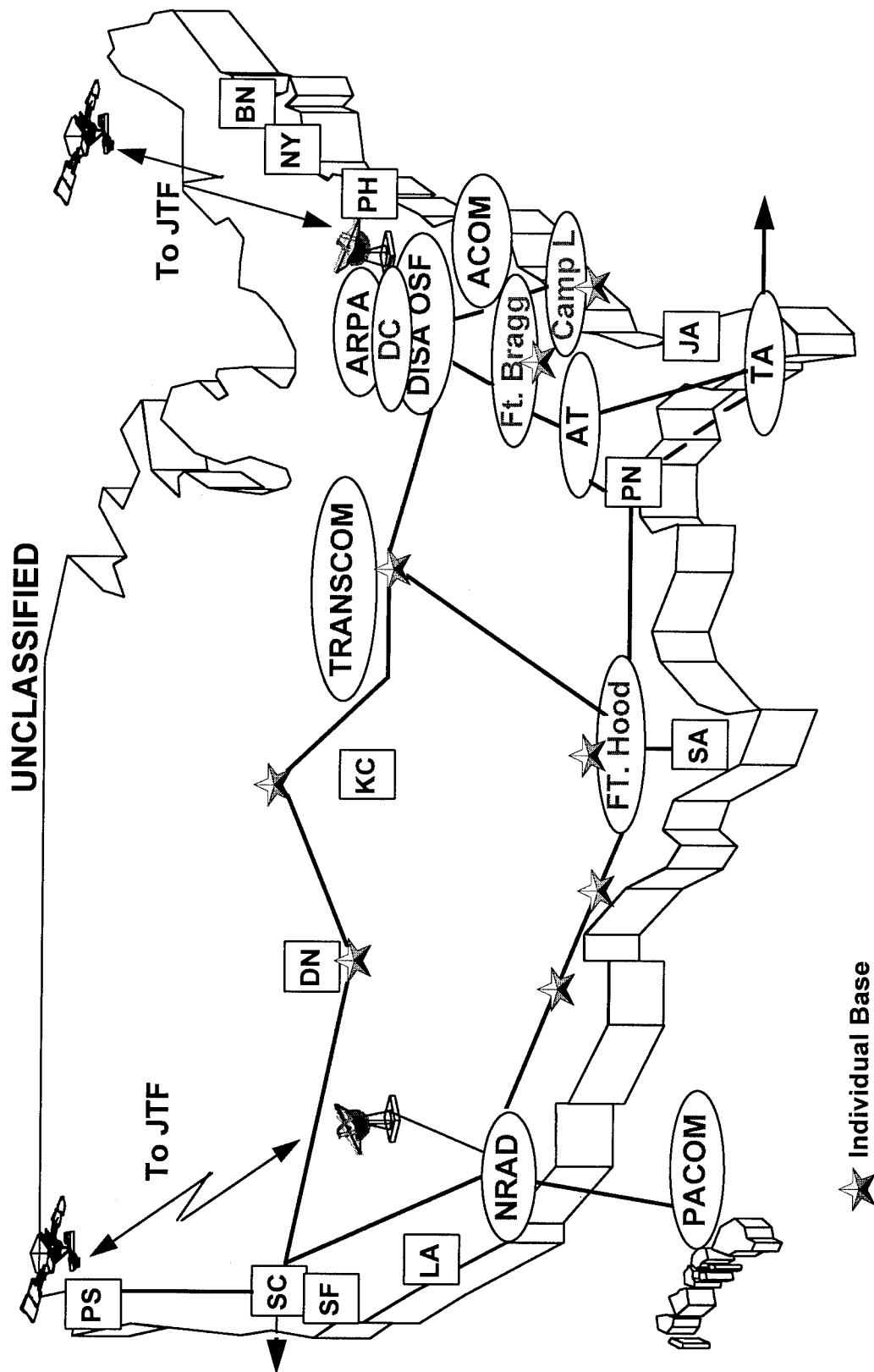
# **GCCS SITE IMPLEMENTATION STATUS** (January - 1995)

UNCLASSIFIED

# of Sites*	
Current .....	21
Planned for FY95 .....	46
Remaining .....	0
Total .....	67

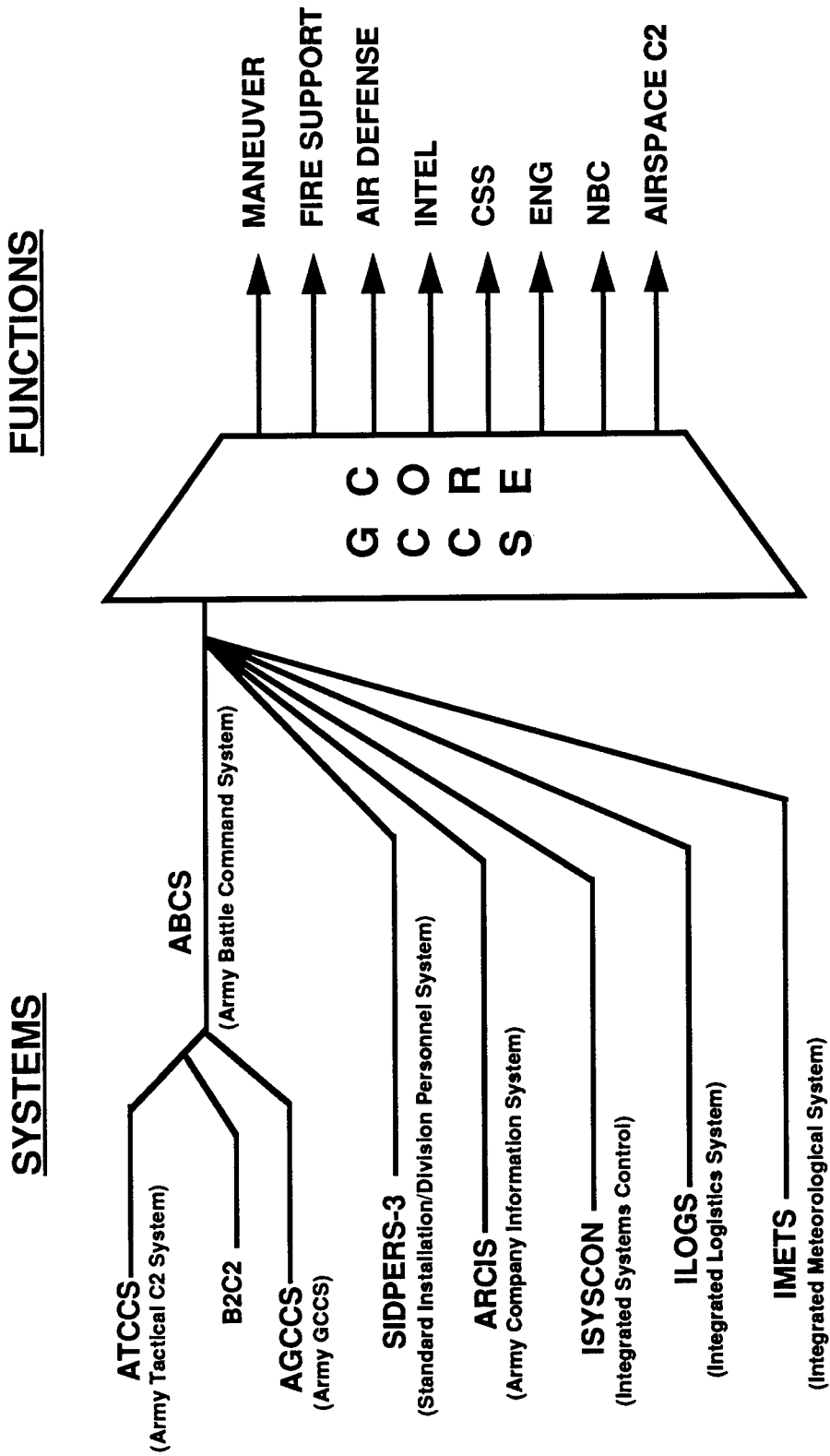


# CORE ATM/DS3 INFRASTRUCTURE GCCS TIER 1 - PROTEUS, JWID, JWICS, DDS & SCAMPI



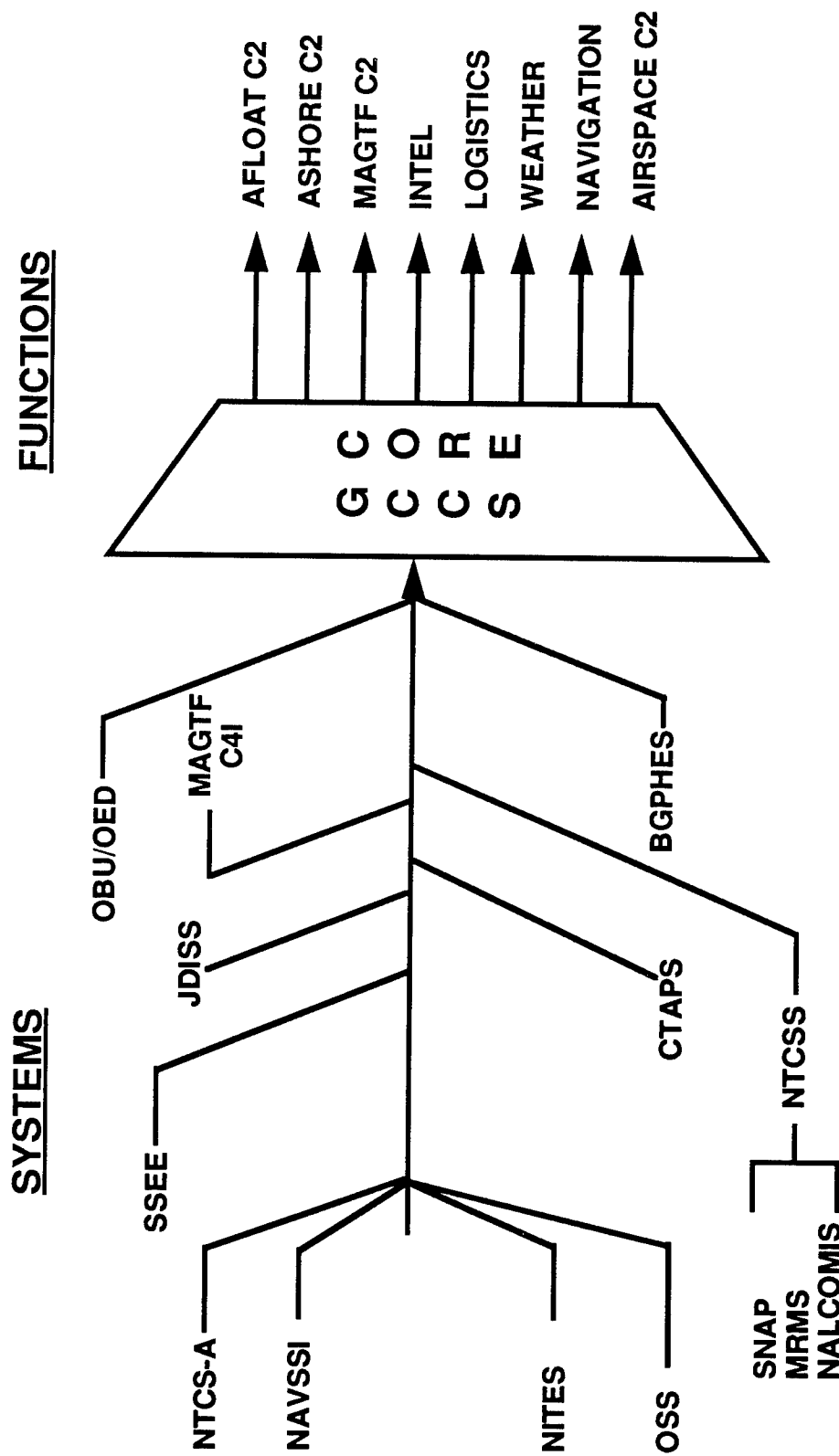
## ARMY MIGRATION SYSTEMS

UNCLASSIFIED



# NAVY MIGRATION SYSTEMS

UNCLASSIFIED



## AIR FORCE MIGRATION SYSTEMS

UNCLASSIFIED

### SYSTEMS

C2IPS

CTAPS

WCCS

GDSS

ADANS

TBM  
Core

GTN

AFC2S

Other Migration Sys

Legacy Functional Req

G C C S  
C O R E

Theater Air Ops

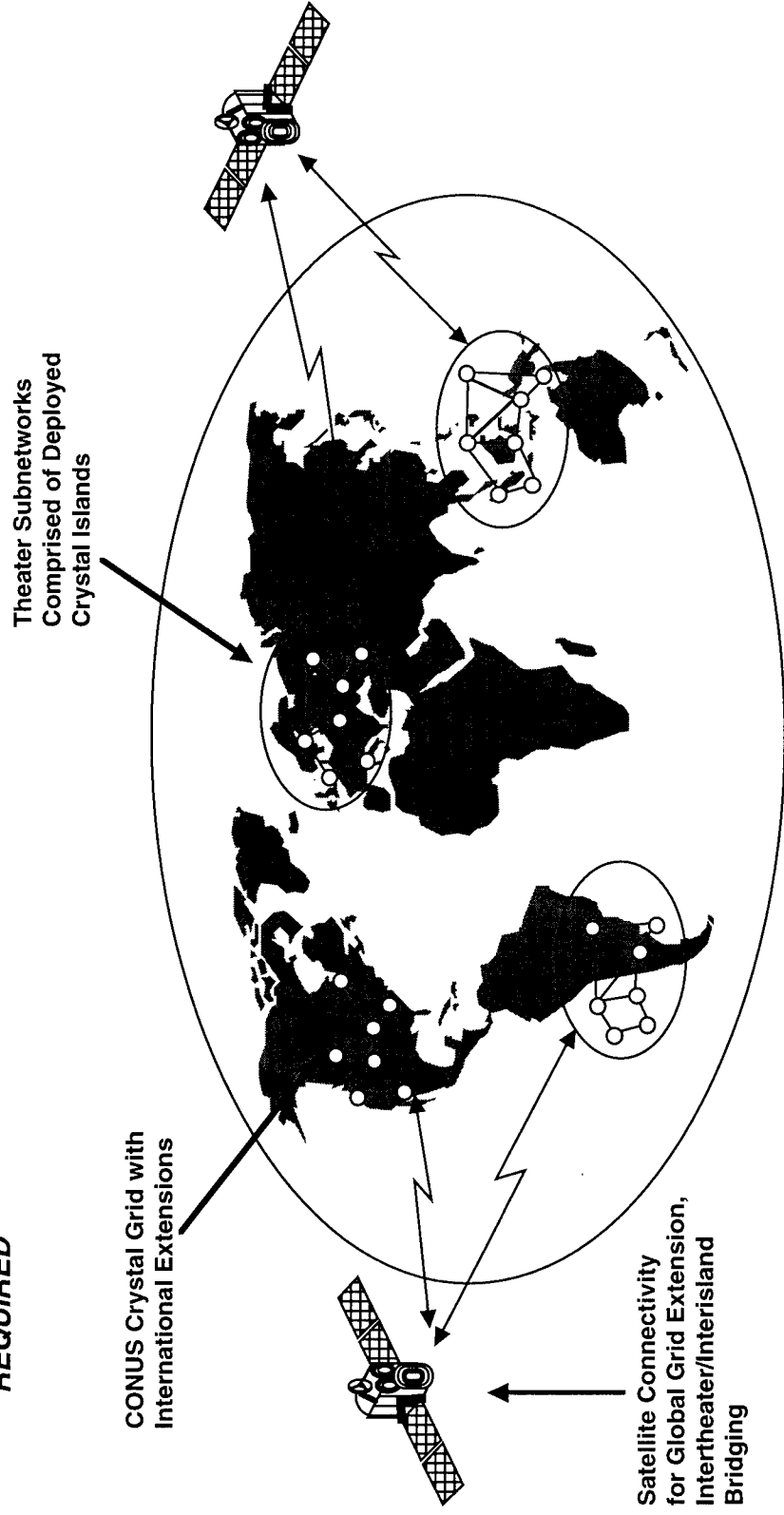
Mobility Air Ops

Deliberate/Crisis Planning

## GLOBAL GRID CREATING A C4I GLOBAL "INFOSPHERE"

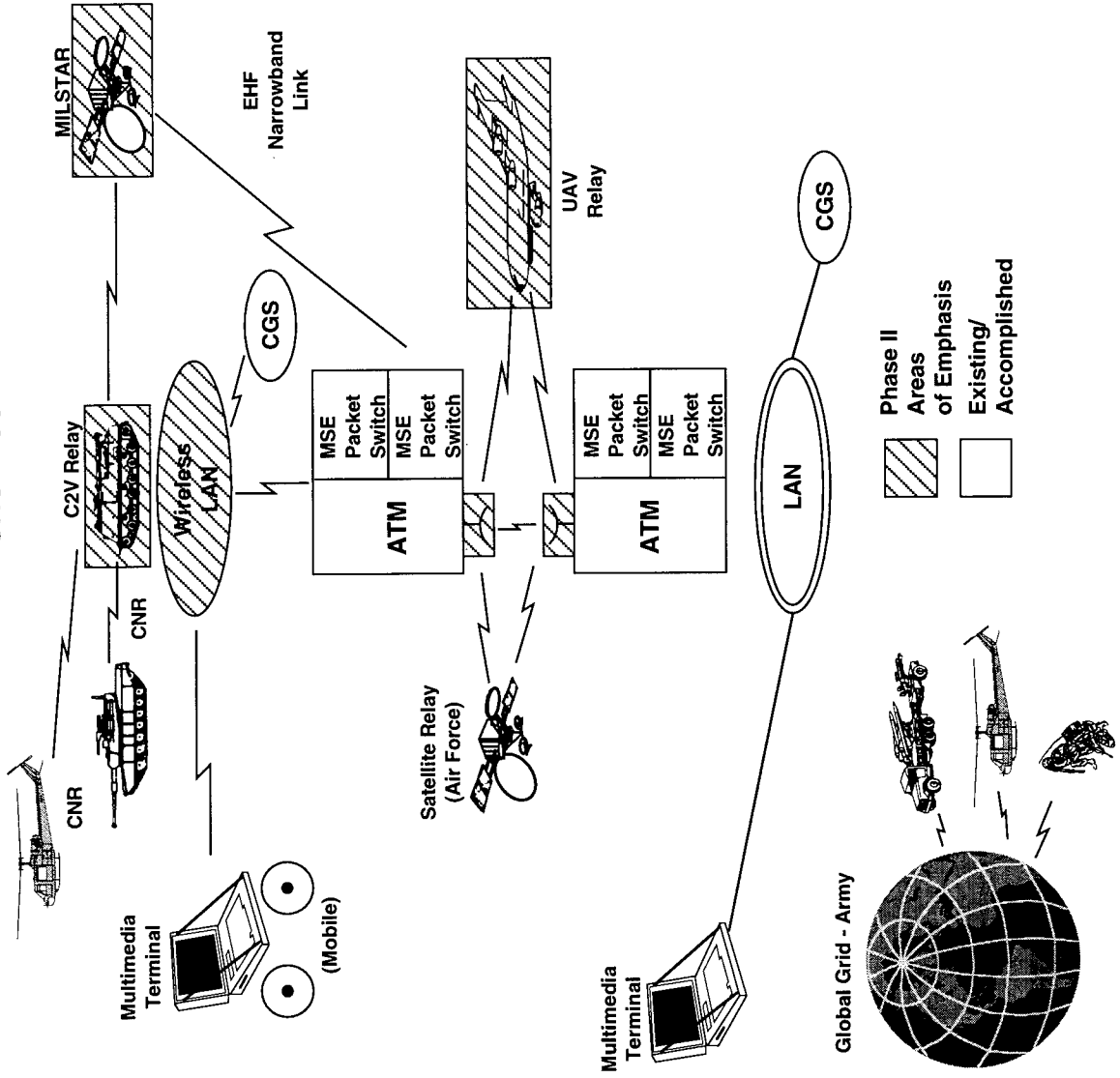
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**PROVIDES WIDE-BANDWIDTH COMMUNICATIONS WHENEVER & WHERE EVER  
REQUIRED**



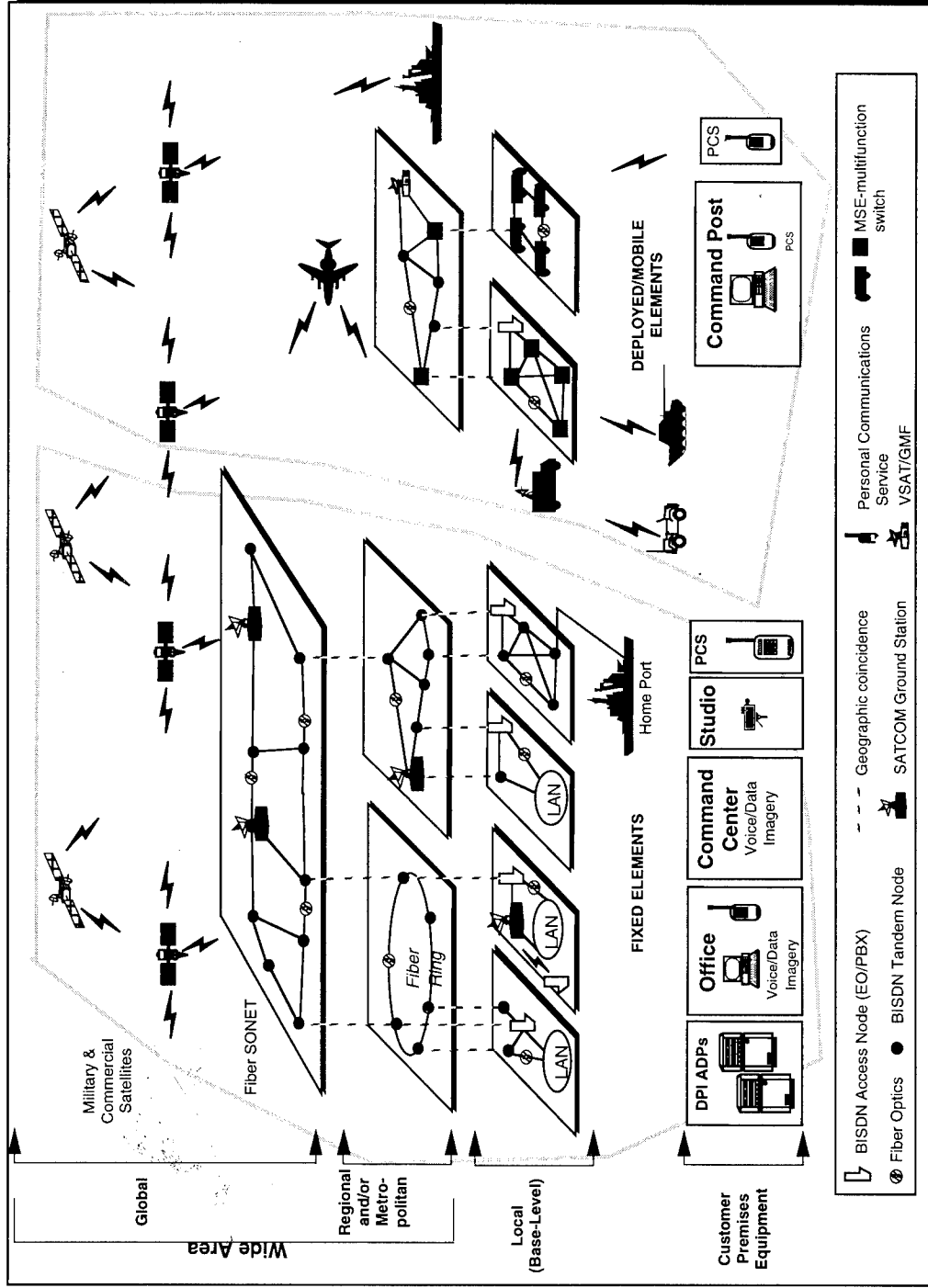
# GLOBAL GRID PHASE II (FY96-FY97)

UNCLASSIFIED

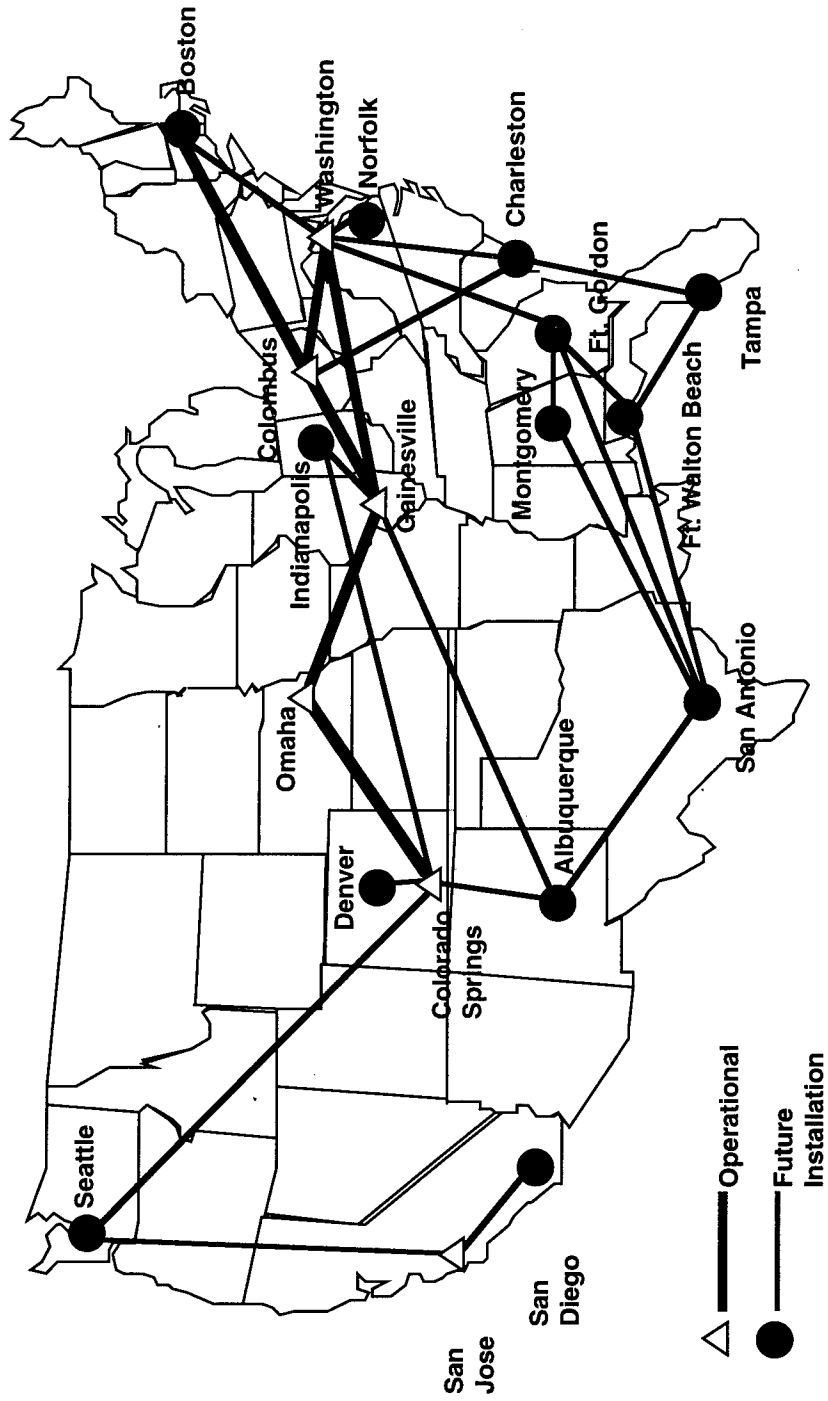


# DISN GOAL ARCHITECTURE

UNCLASSIFIED

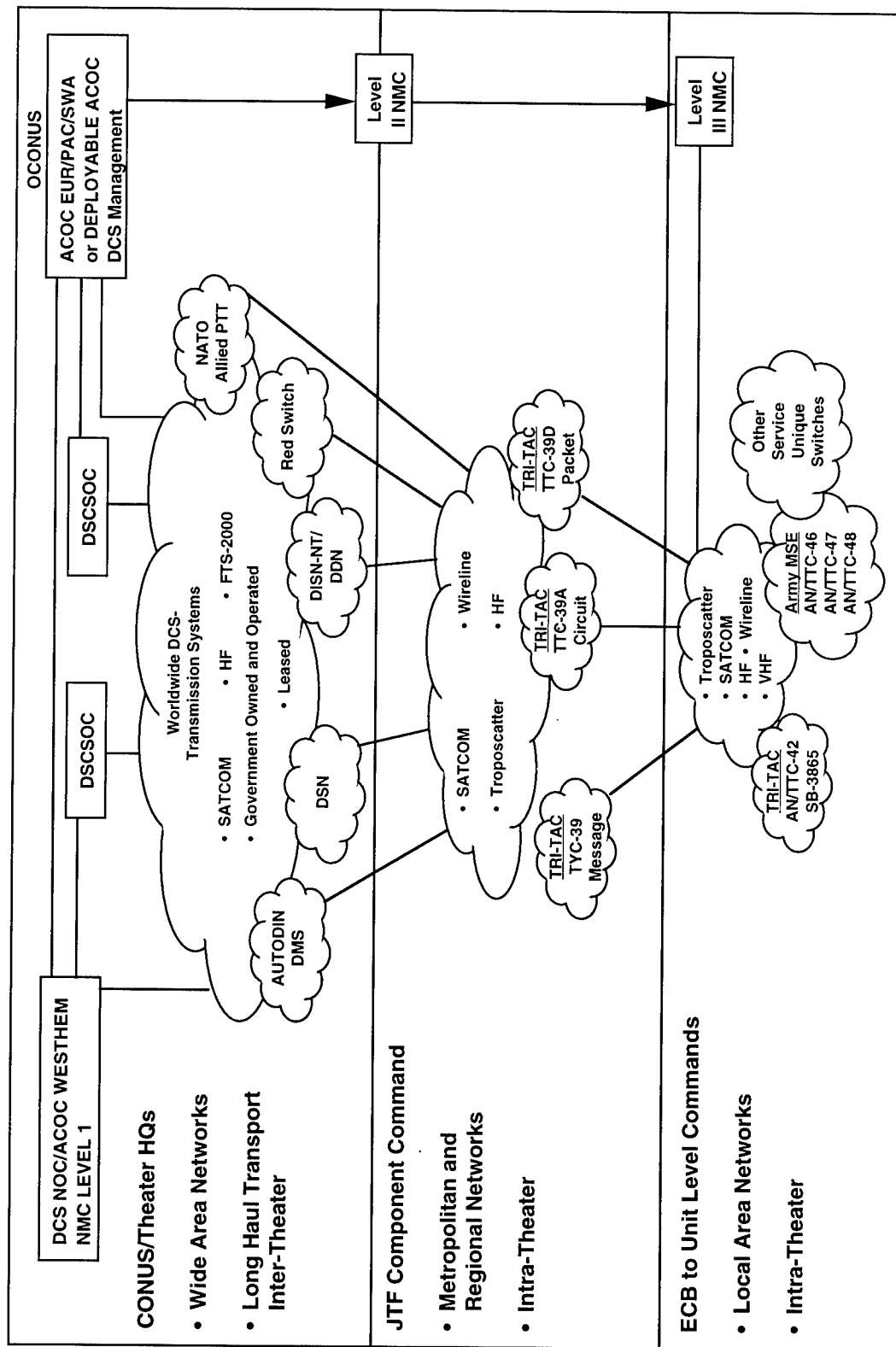


## DISN T-3 NETWORK HUB SITES



# DISN DEPLOYED BASELINE

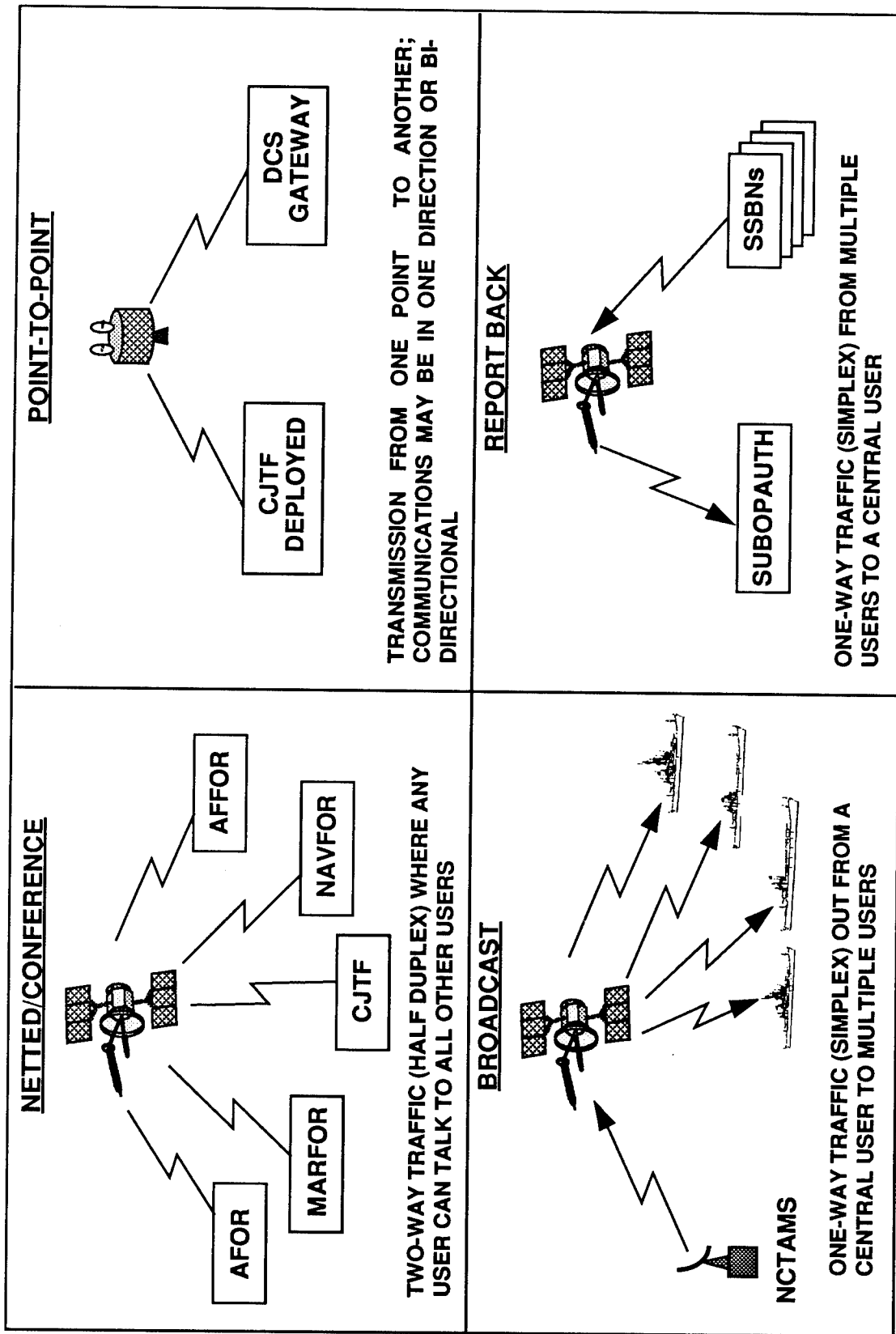
UNCLASSIFIED





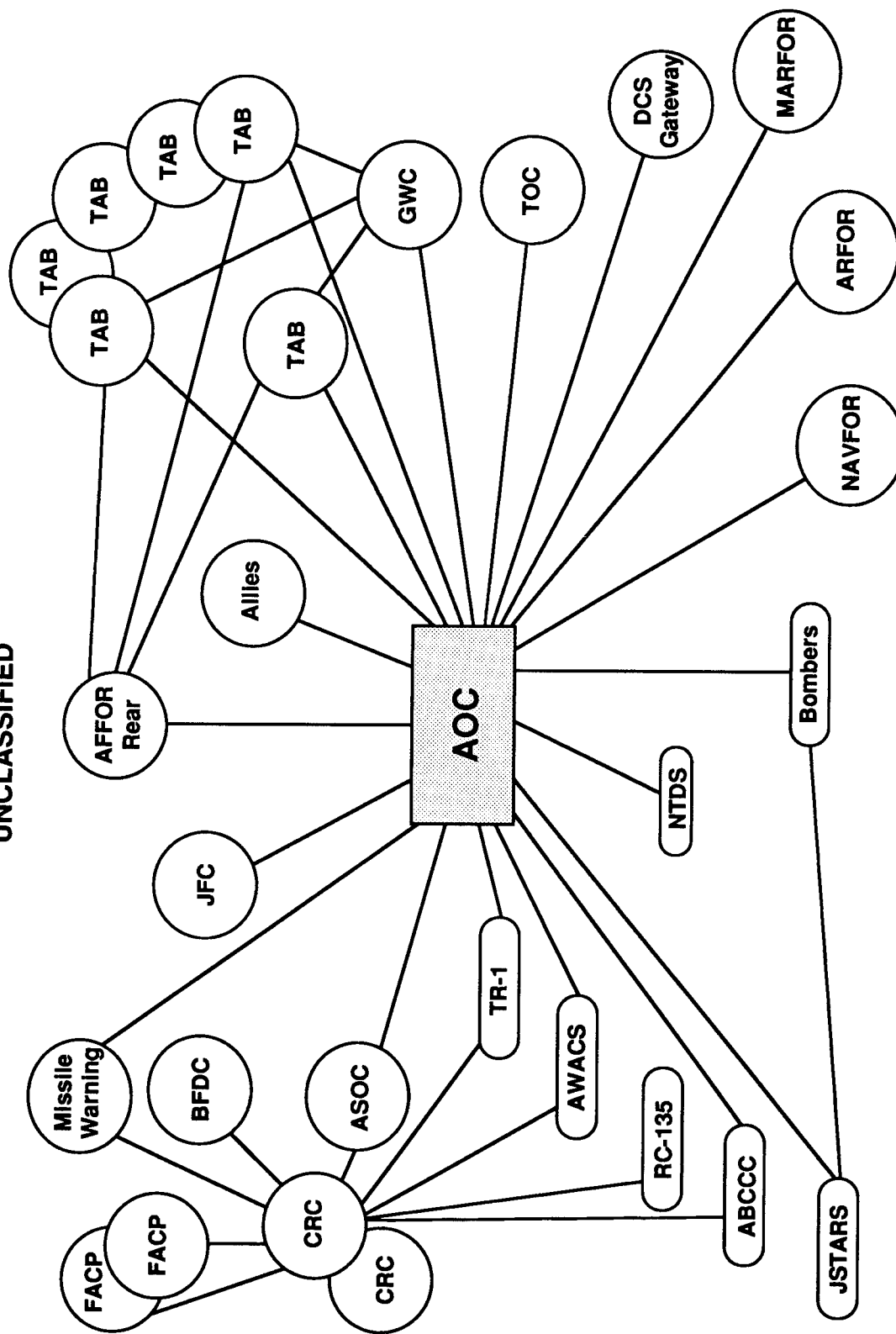
# SATCOM CONNECTIVITY OVERVIEW

UNCLASSIFIED



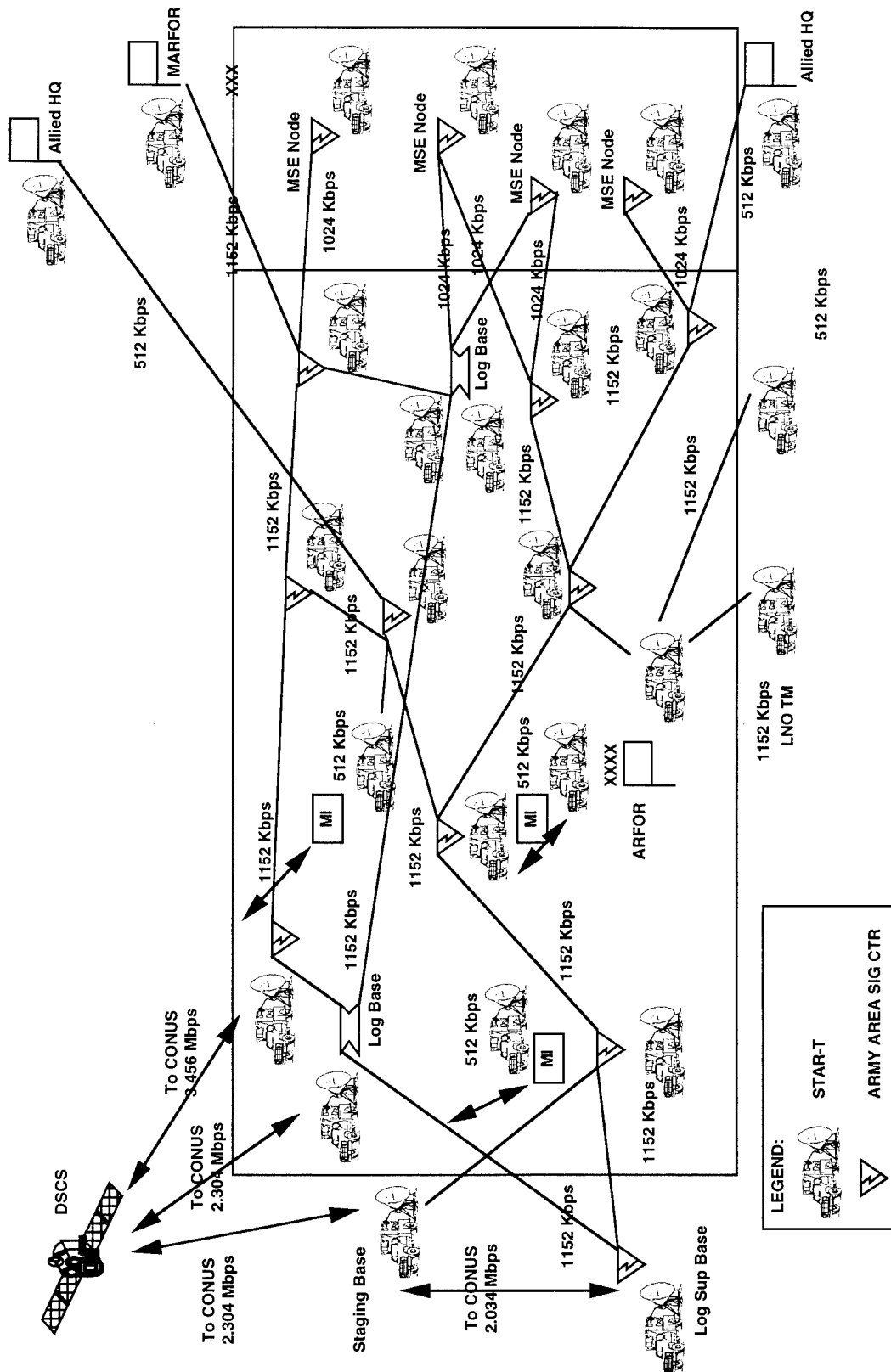
# SATCOM CONNECTIVITY FOR AIR OPERATIONS CENTERS (Notional, Sustained Large Force Deployment)

UNCLASSIFIED



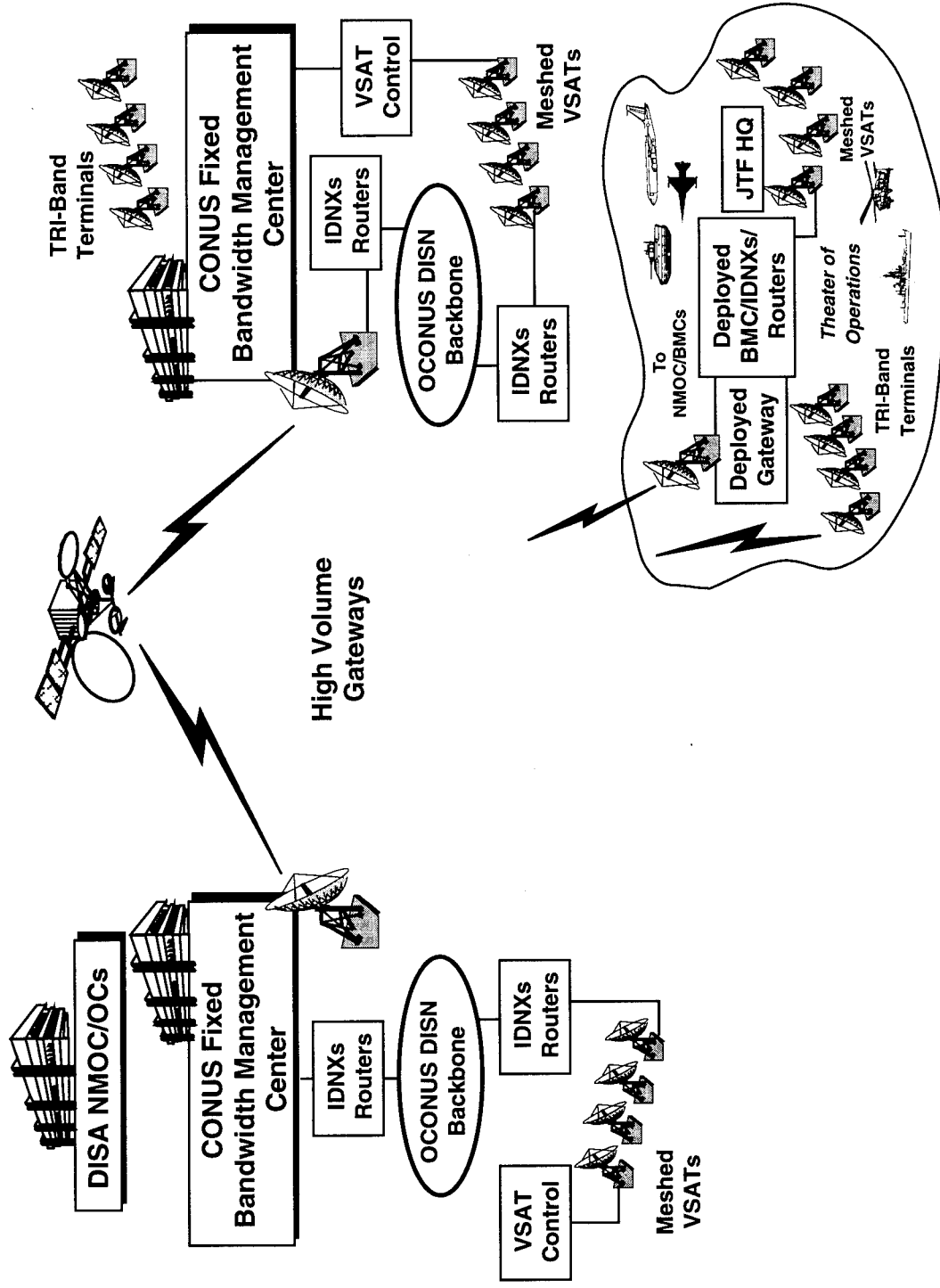
# ARMY COMMON USER SYSTEM (ACUS) REQUIREMENTS FOR DSCS

UNCLASSIFIED

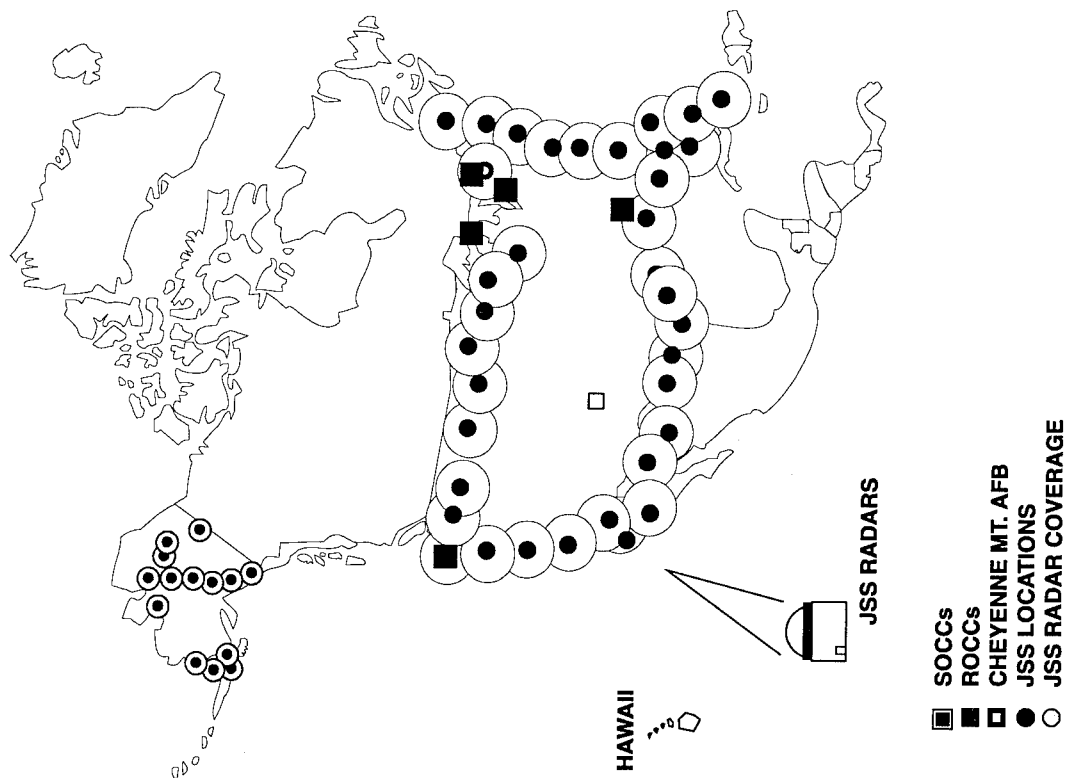


# DOD COMMERCIAL SATCOM MANAGEMENT NETWORK AND USER TOPOLOGY

UNCLASSIFIED

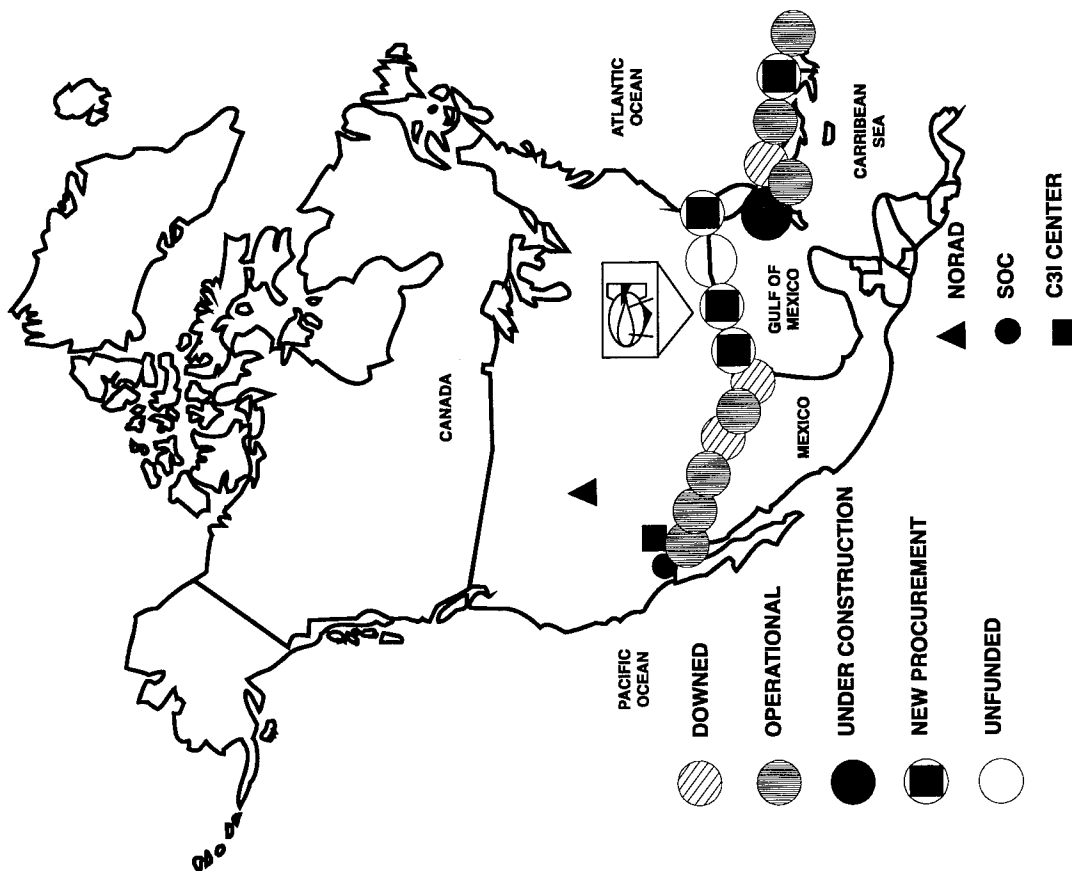


# US AIR DEFENSE SURVEILLANCE SYSTEM UNCLASSIFIED



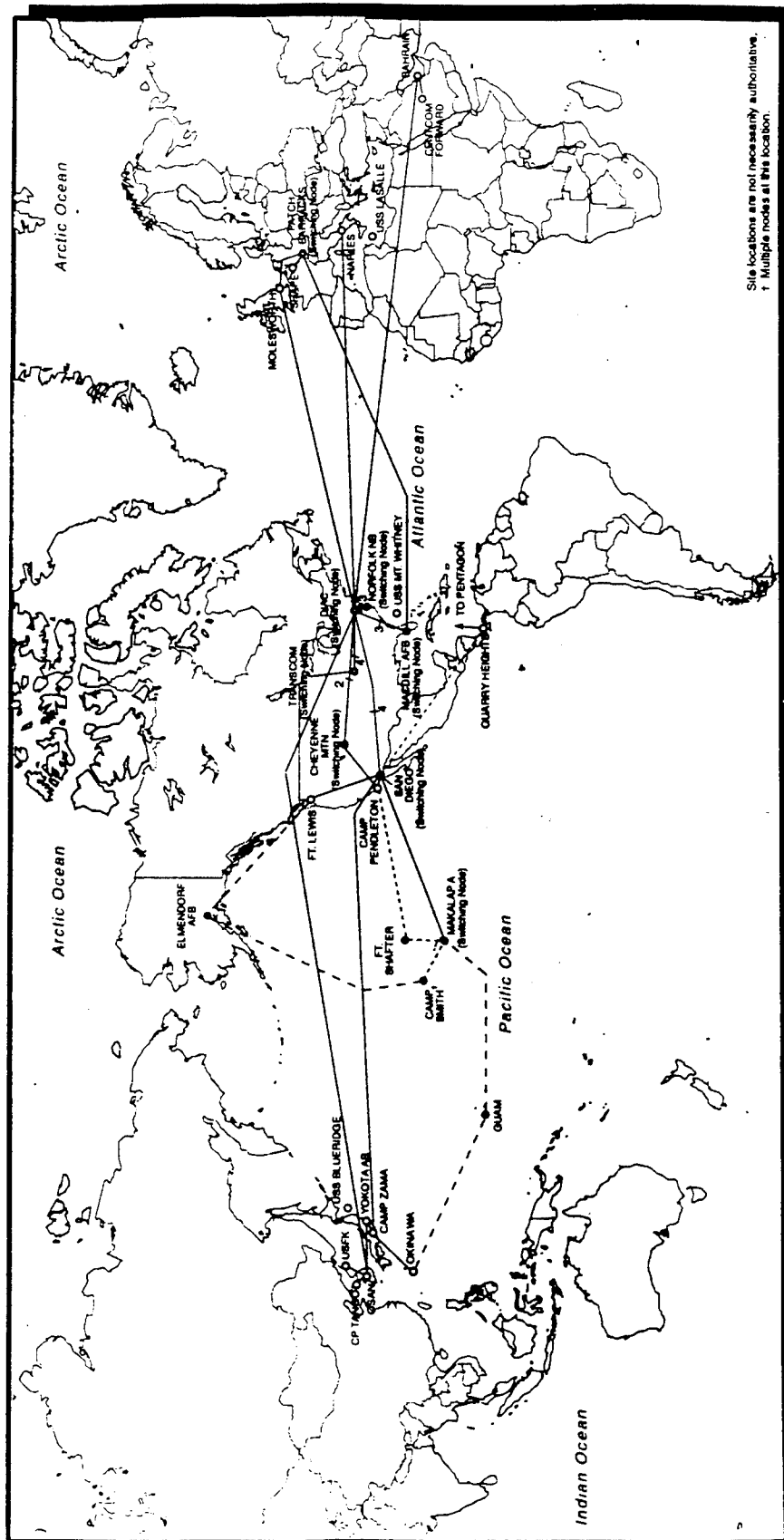
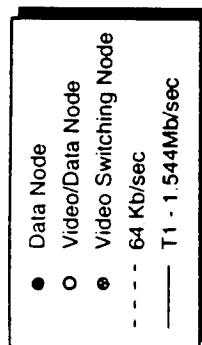
# AEROSTAT RADAR COVERAGE

UNCLASSIFIED



# WORLDWIDE NOTIONAL JWICS TOPOLOGY

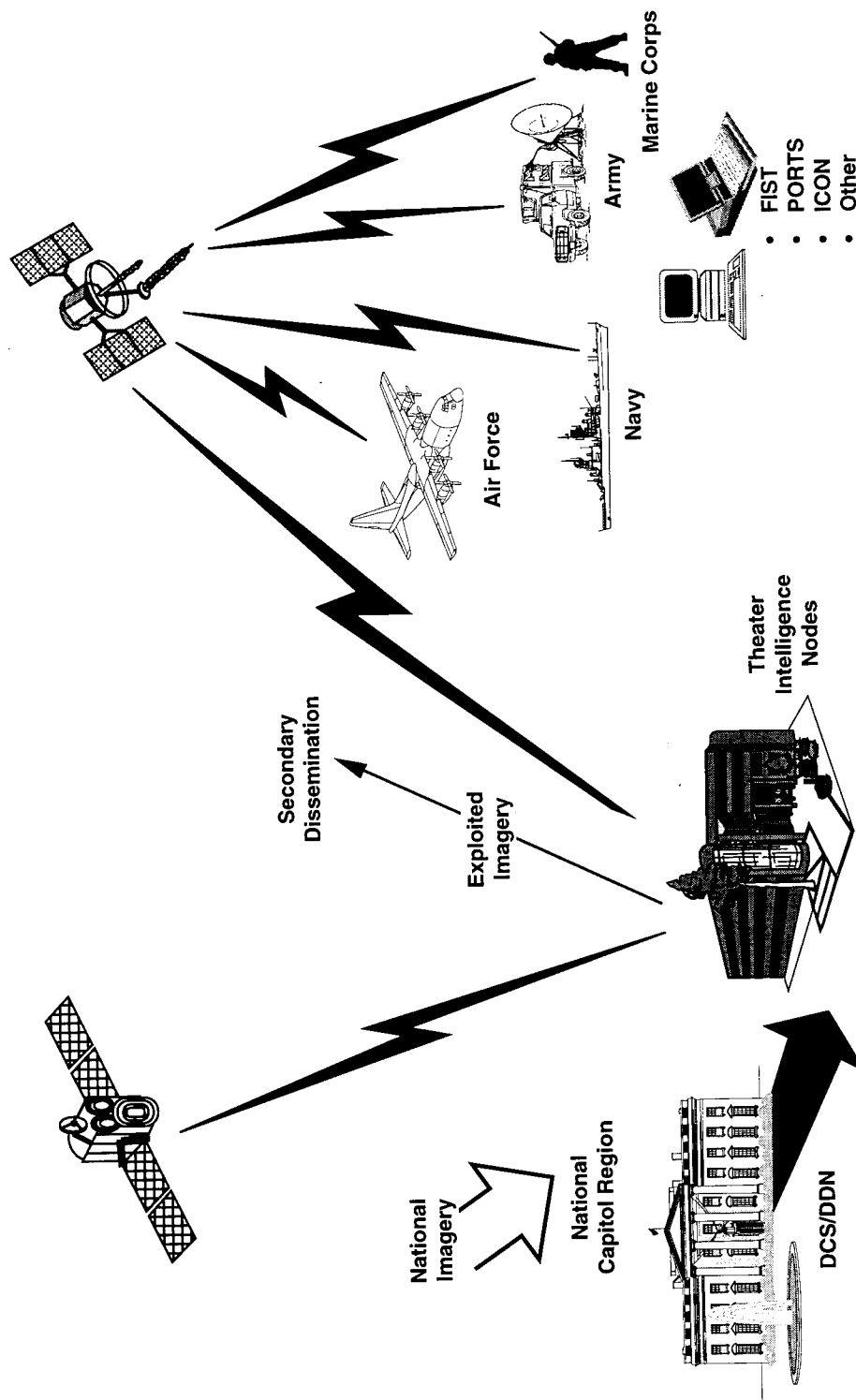
FOR OFFICIAL USE ONLY



Site locations are not necessarily authoritative.  
Multiple nodes at this location.

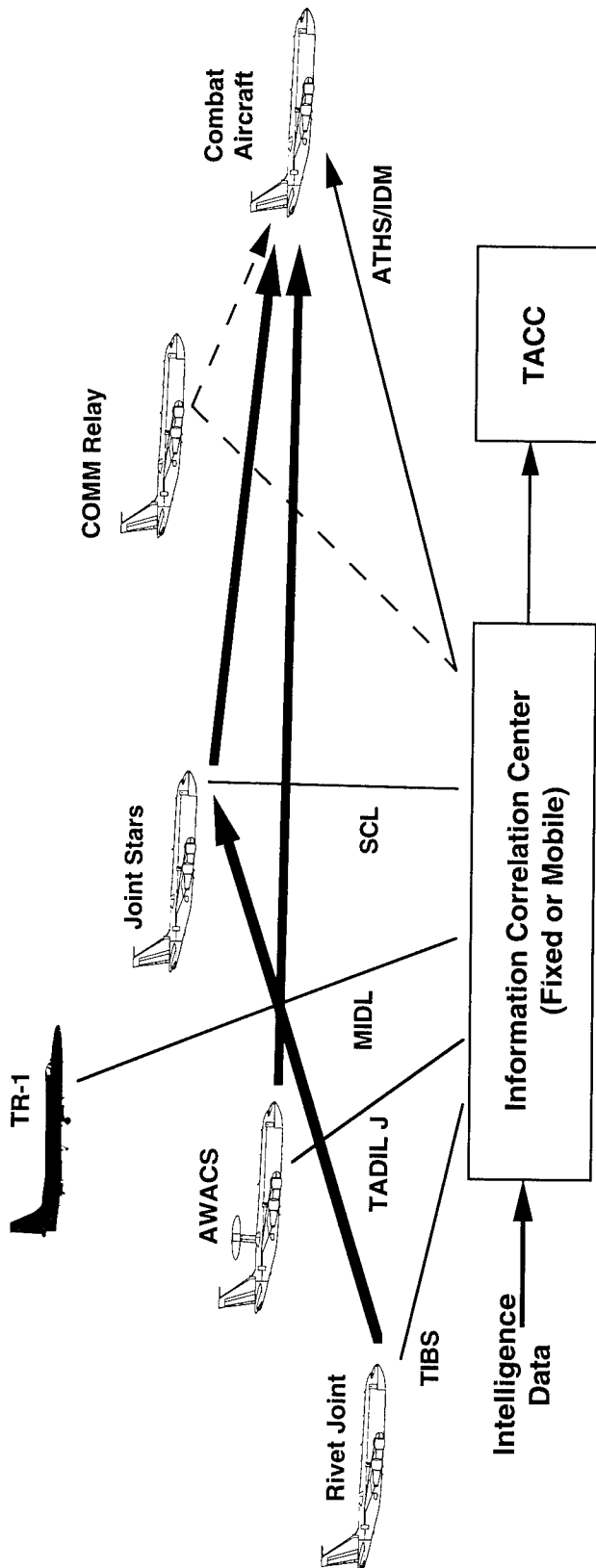
# IMAGERY SYSTEM COVERAGE

UNCLASSIFIED



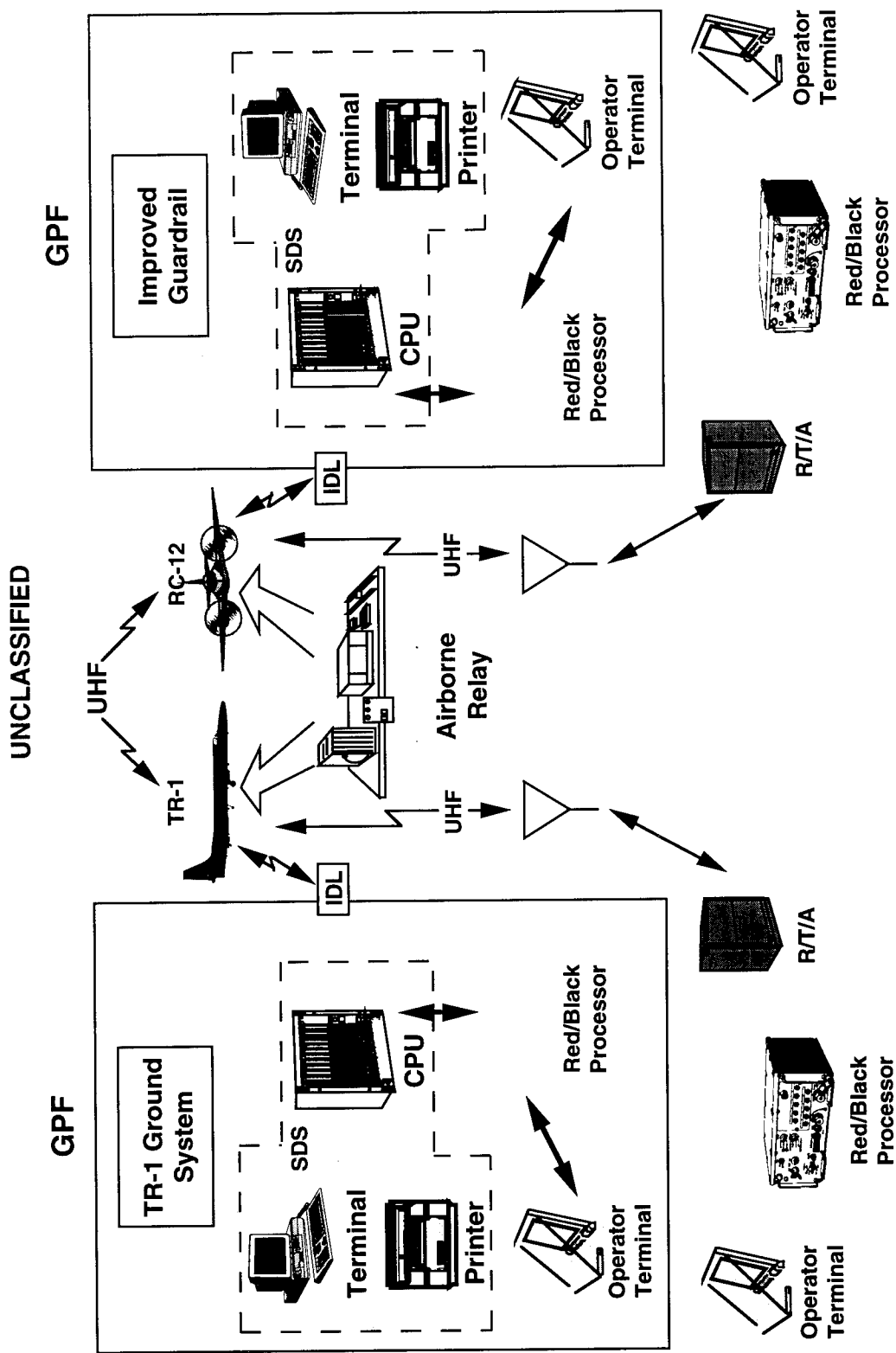
# TACTICAL SITUATION AWARENESS

UNCLASSIFIED

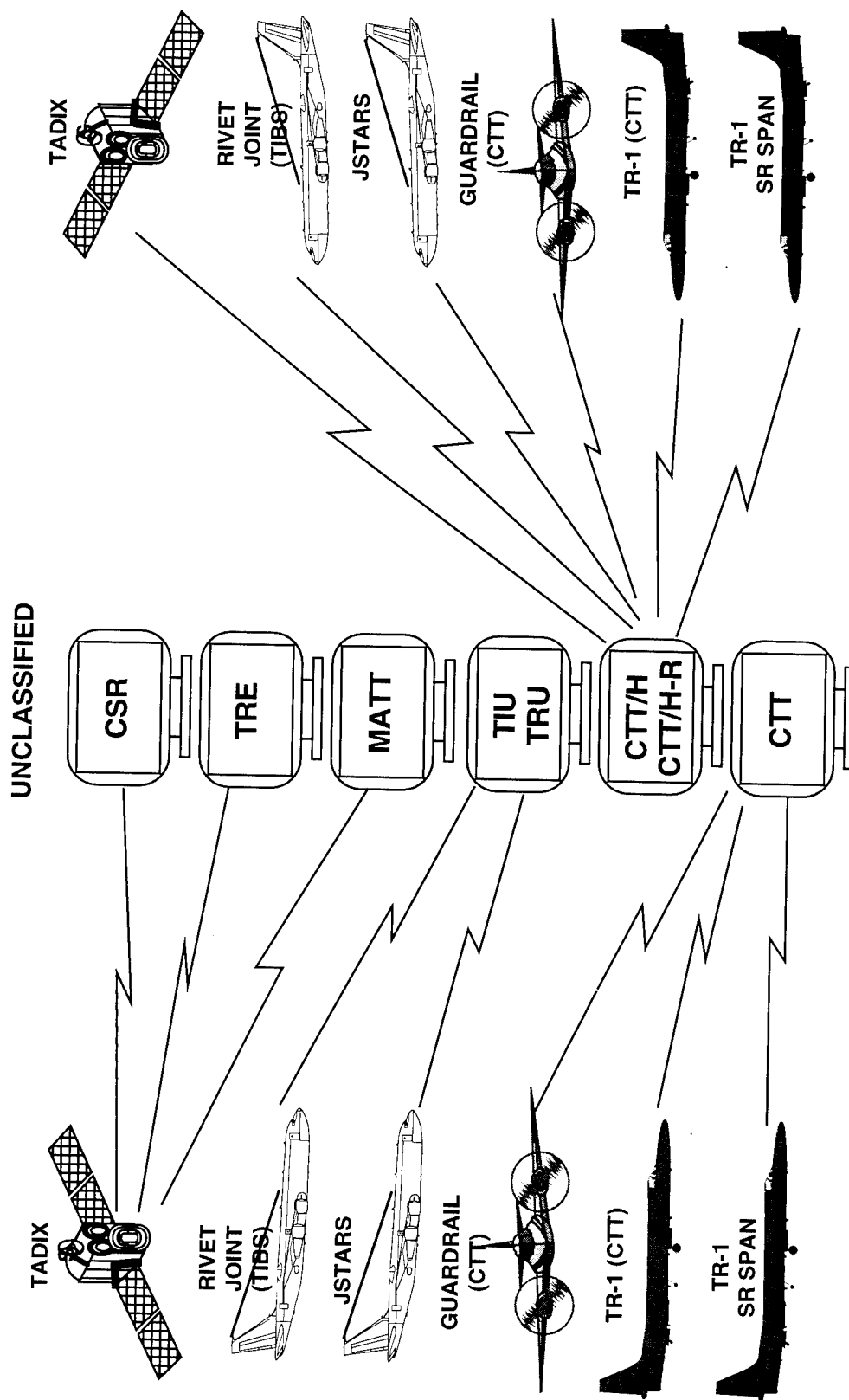


DATA ROLE	MSN	COMM SOURCE	COMM SOURCE	COMMUNICATIONS SOLUTIONS		
				NOW	NEAR TERM	FAR TERM
SITUATION AWARENESS	AIR To AIR	AWACS RIVET JOINT	COMBAT AIRCRAFT	UHF VOICE	IDM UHF/HQ or VHF Dedicated Channel 16 kbps Broadcast Area Filtered	ADV DIG Comm Term UHF/VHF/A/J 50 kbps Broadcast Area Filtered
	AIR To Ground	JSTARS RIVET JOINT	COMBAT AIRCRAFT	UHF VOICE	IDM UHF/HQ or VHF Dedicated Channel 16 kbps Broadcast Area Filtered	ADV DIG Comm Term UHF/VHF/A/J 50 kbps Broadcast Area Filtered

# COMBAT TACTICAL TERMINAL - SYSTEM ARCHITECTURE

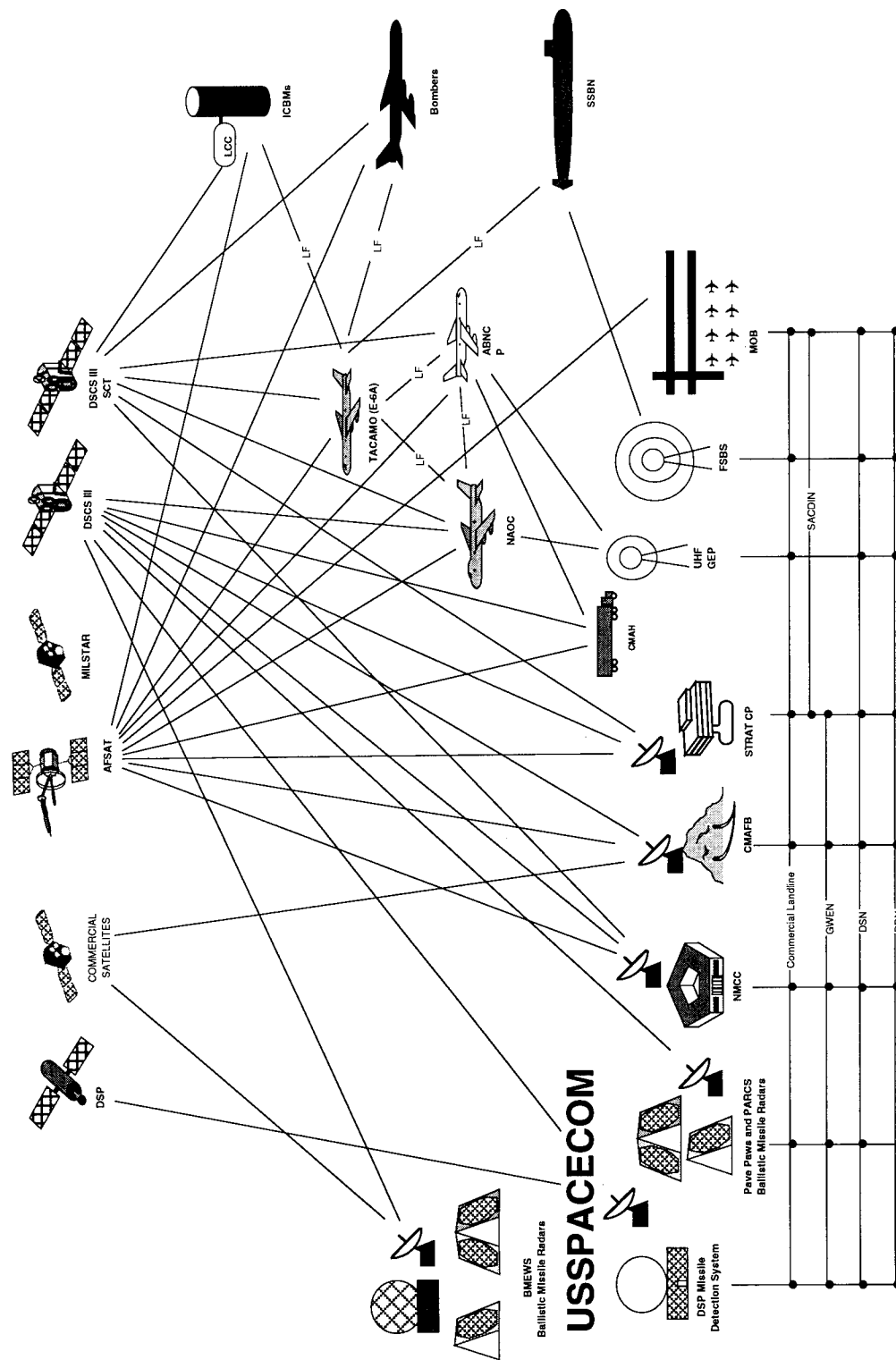


# INTELLIGENCE TERMINAL CONNECTIVITY

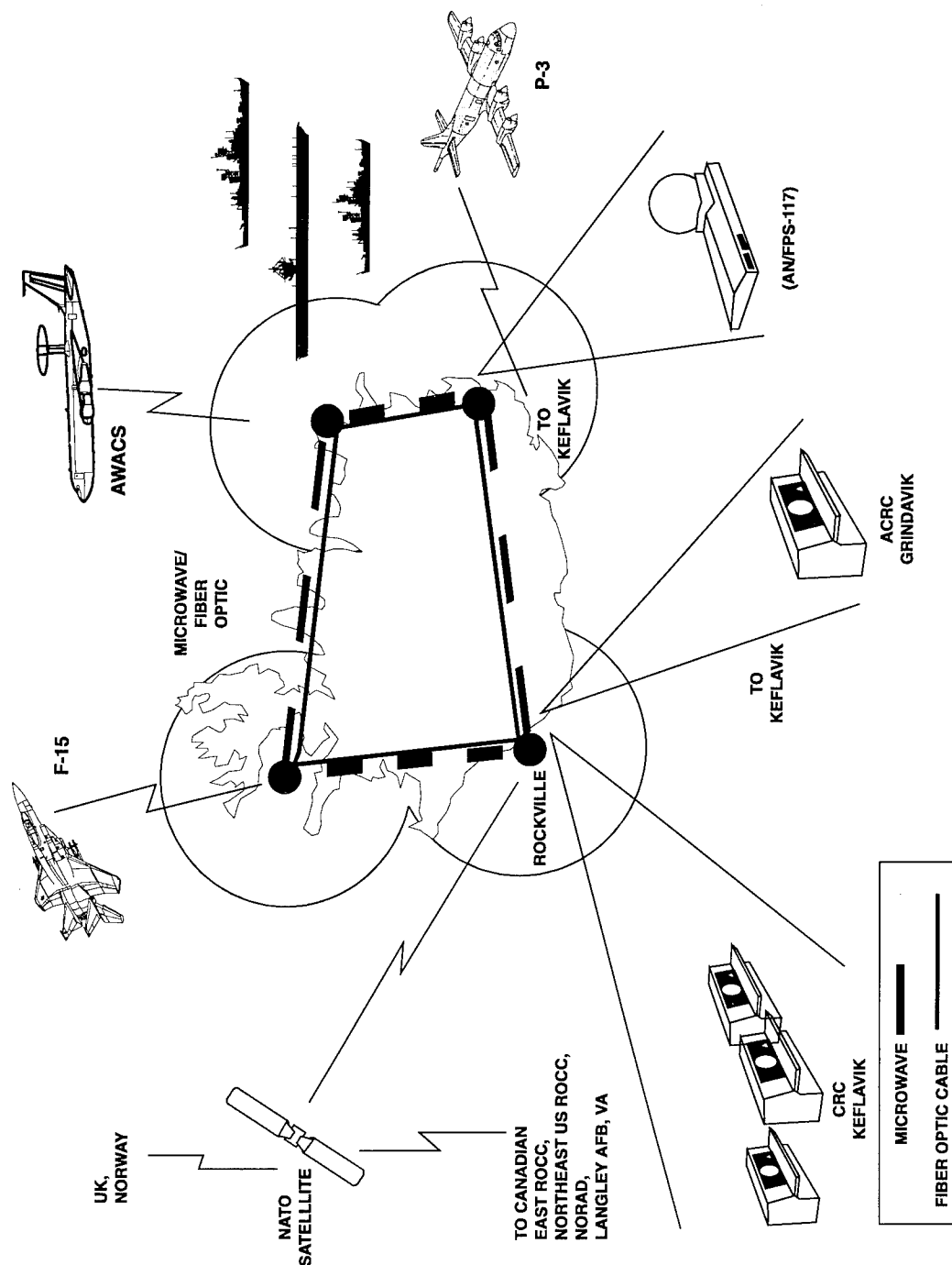


# REPRESENTATIVE USSTRATCOM COMMUNICATIONS SYSTEMS

UNCLASSIFIED

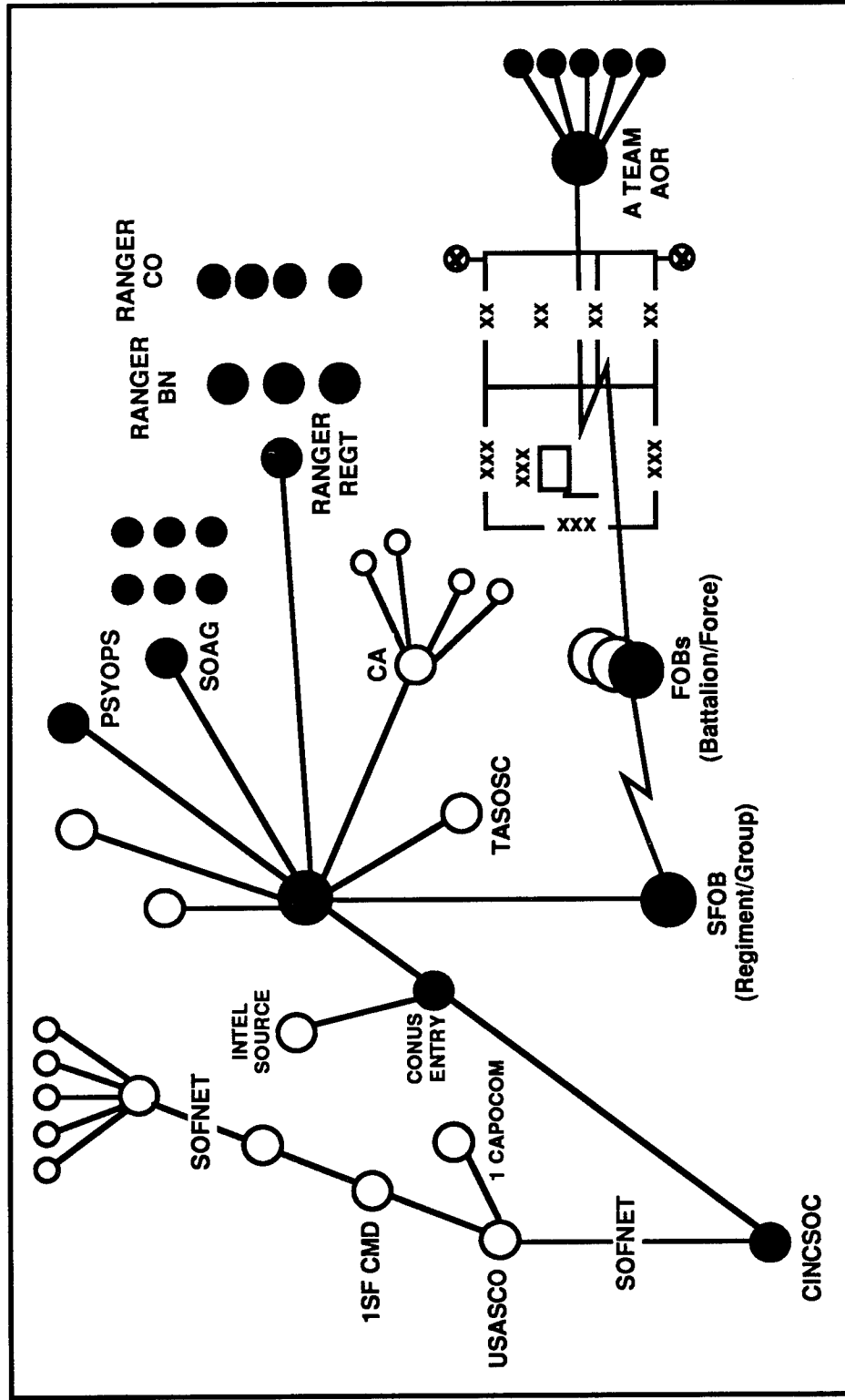


# IADS UNCLASSIFIED

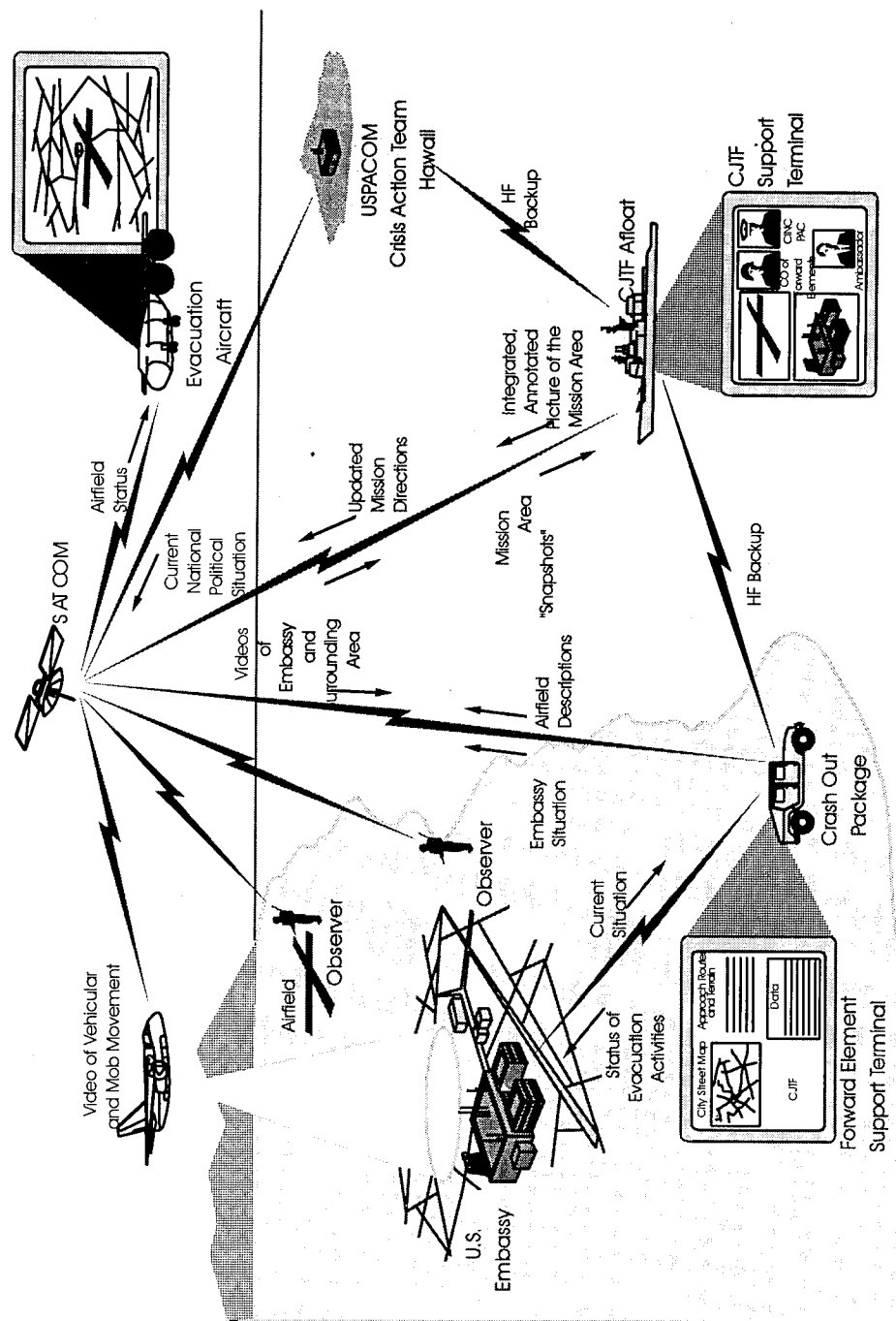


# SPECIAL OPERATIONS FORCES ARCHITECTURE

UNCLASSIFIED

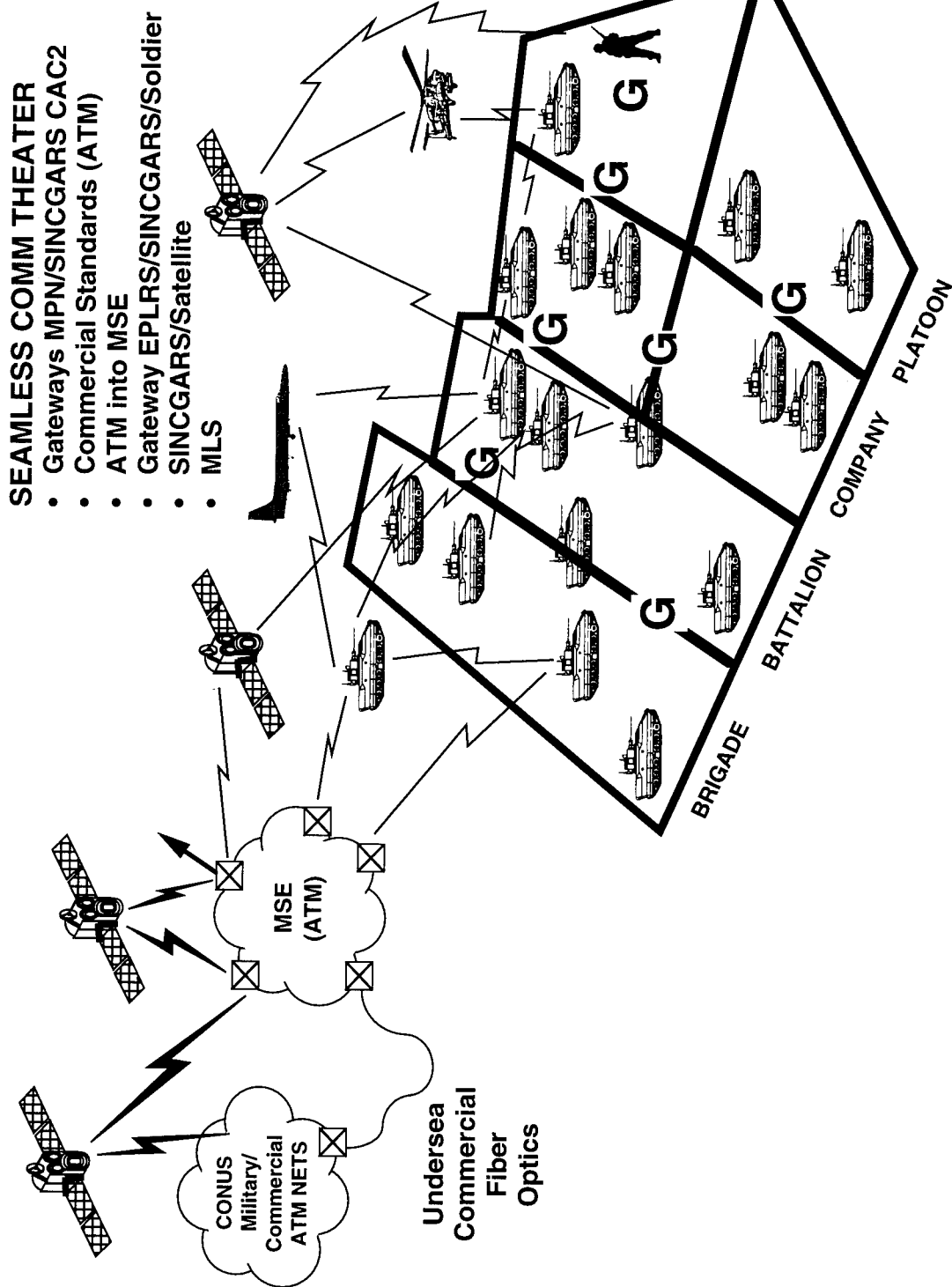


# REPRESENTATIVE USPACOM JTF UNCLASSIFIED



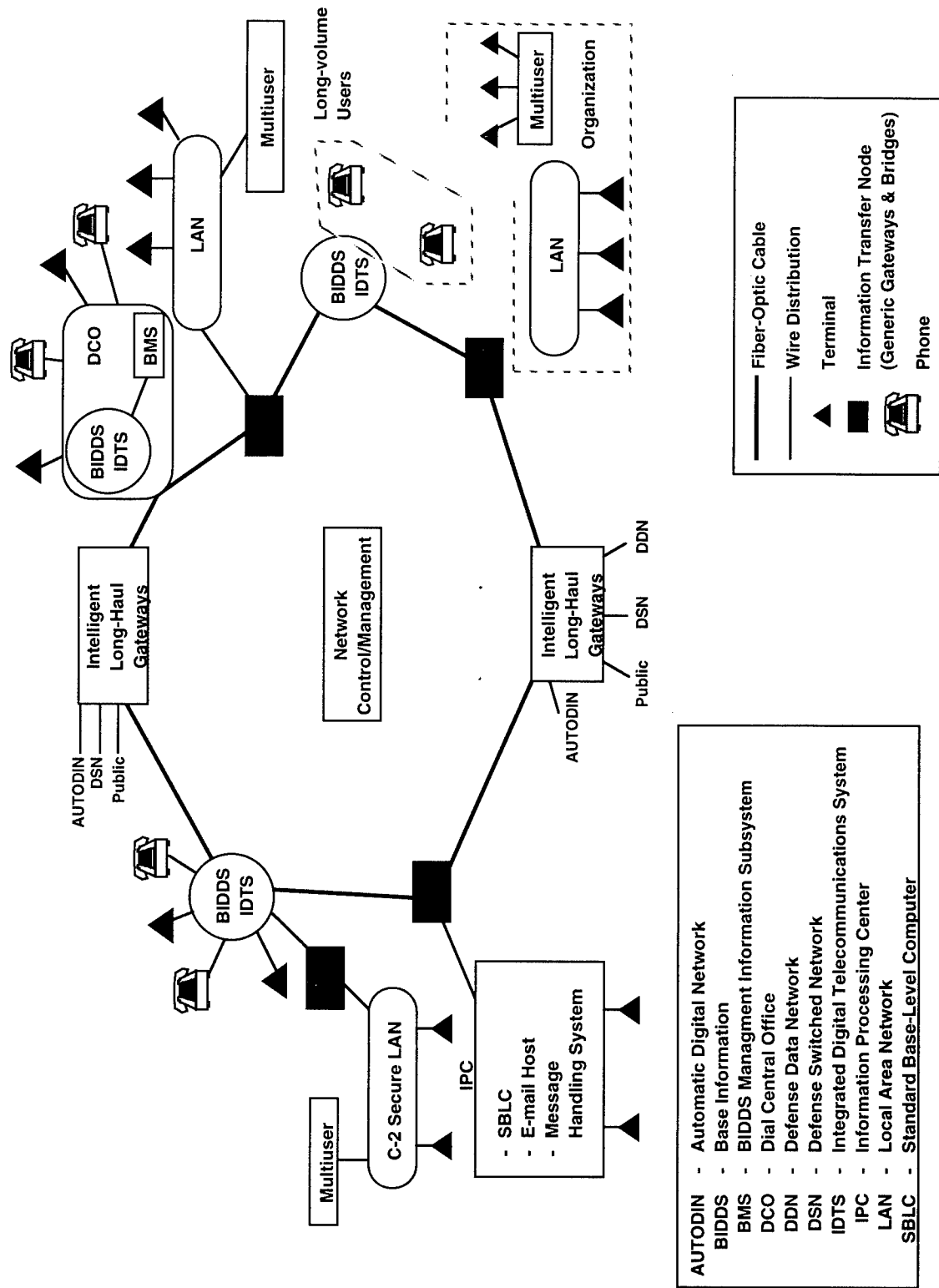
## FUTURE GLOBAL GRID ARCHITECTURE

UNCLASSIFIED



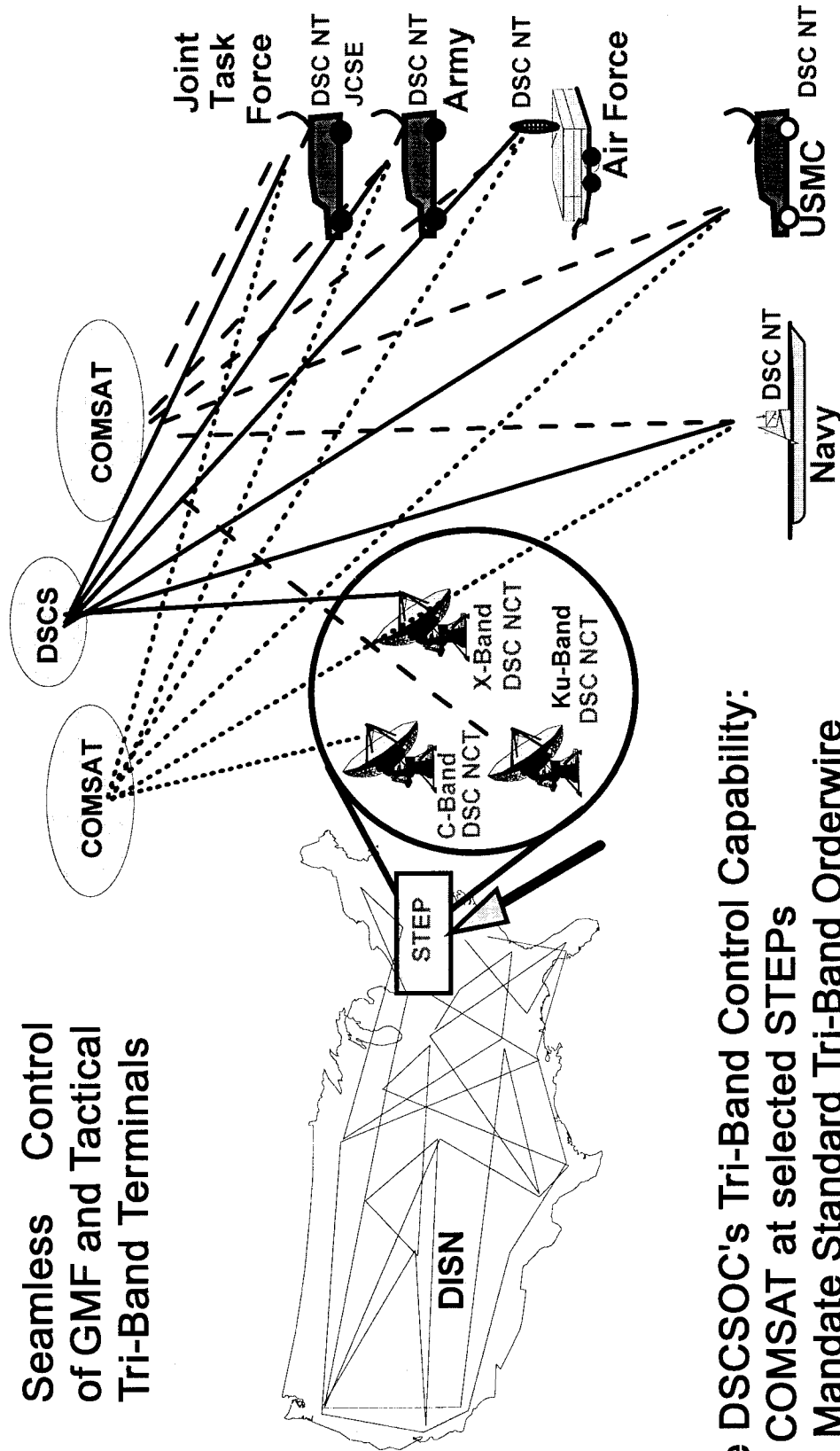
# AIR FORCE TARGET LOCAL INFORMATION TRANSFER ARCHITECTURE

UNCLASSIFIED



## TRI-BAND JOINT CONCEPT OF OPERATIONS

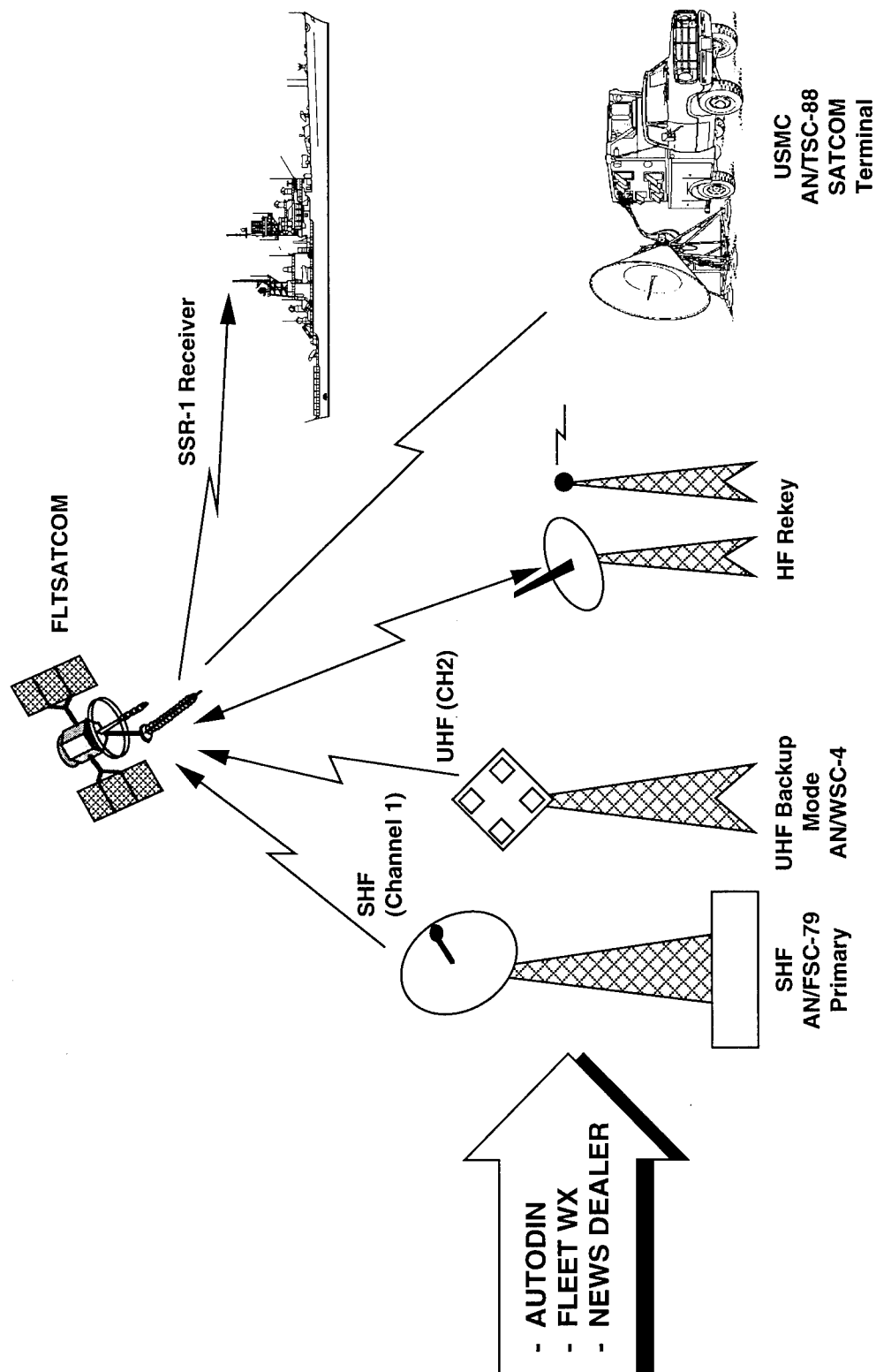
Seamless Control  
of GMF and Tactical  
Tri-Band Terminals



Give DSCSOC's Tri-Band Control Capability:  
Add COMSAT at selected STEPs  
JCS Mandate Standard Tri-Band Orderwire  
Use Existing GMF Structure / JCS Procedures

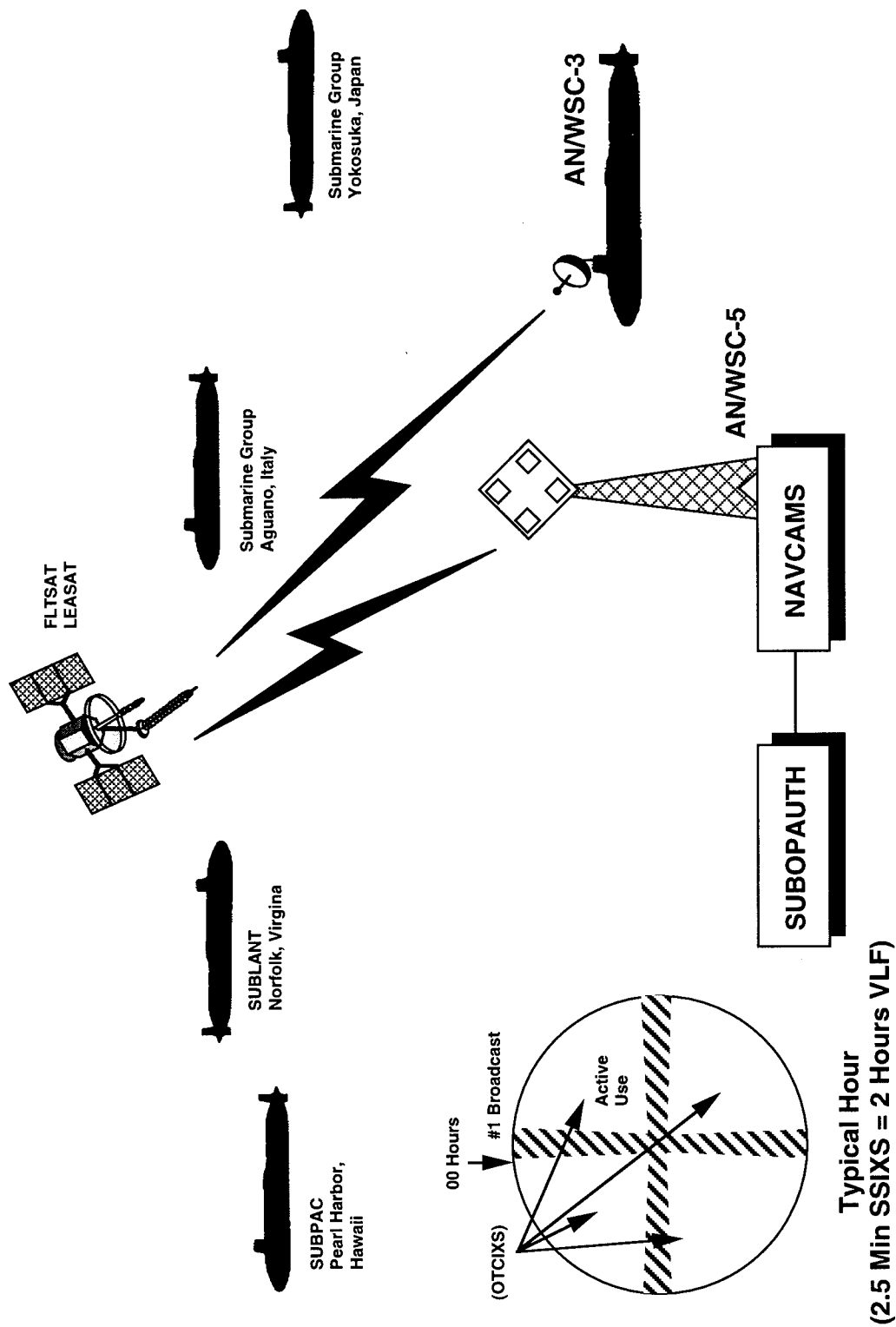
# FLEET SATELLITE BROADCAST SYSTEM

UNCLASSIFIED



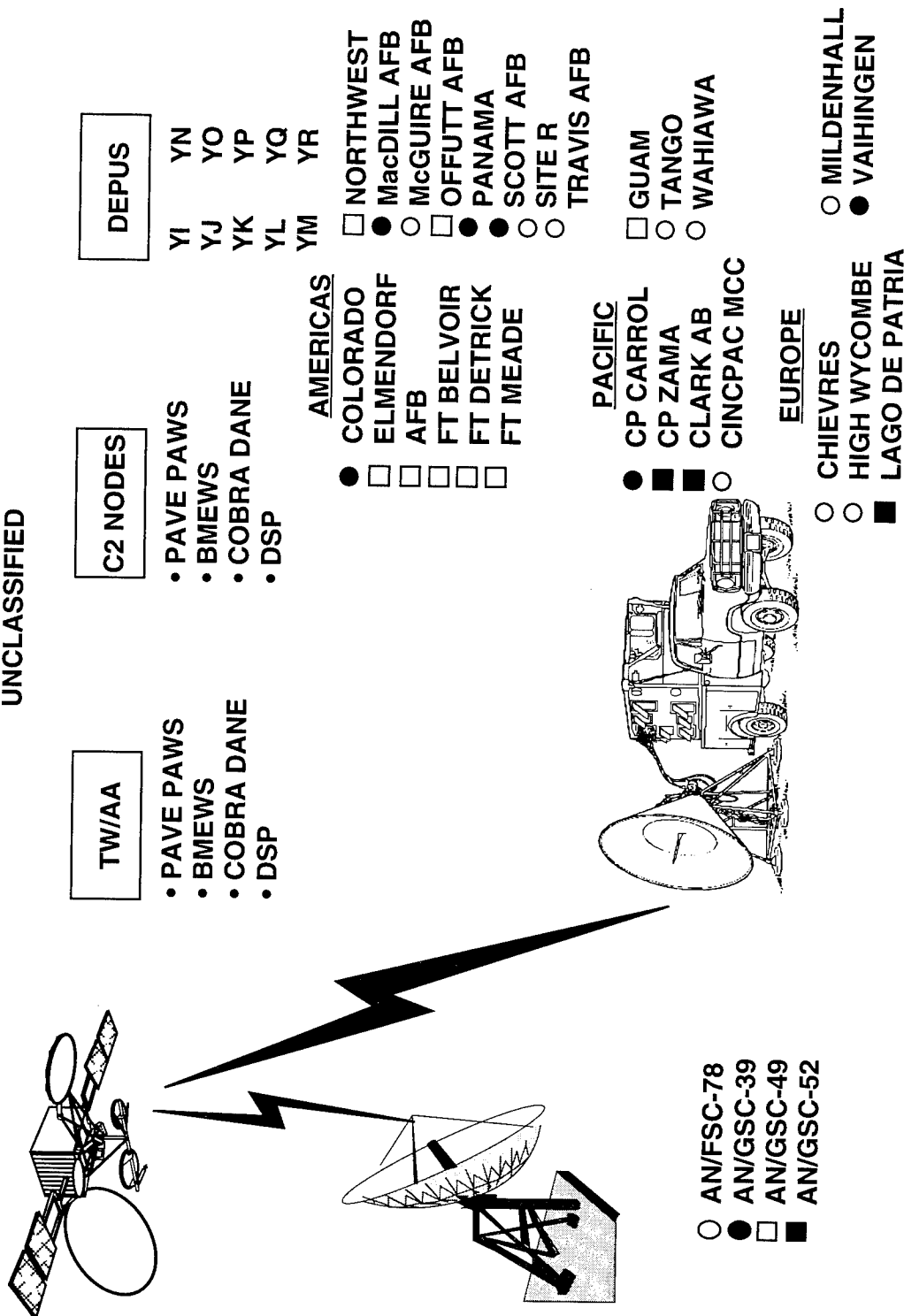
# SUBMARINE SATELLITE INFORMATION EXCHANGE SYSTEM (SSIXS)

UNCLASSIFIED



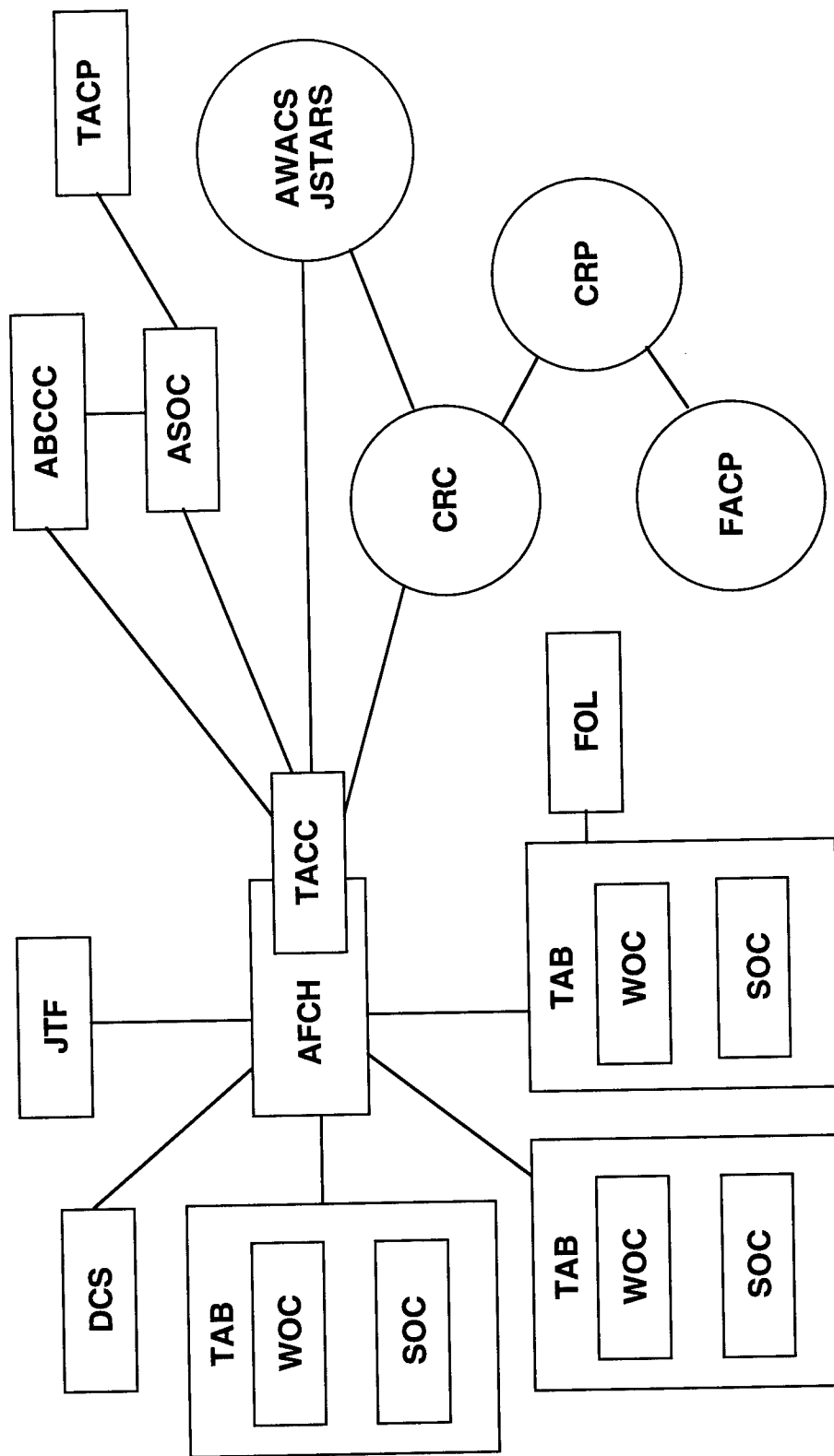
# JAM RESISTANT SECURE COMMUNICATIONS

UNCLASSIFIED



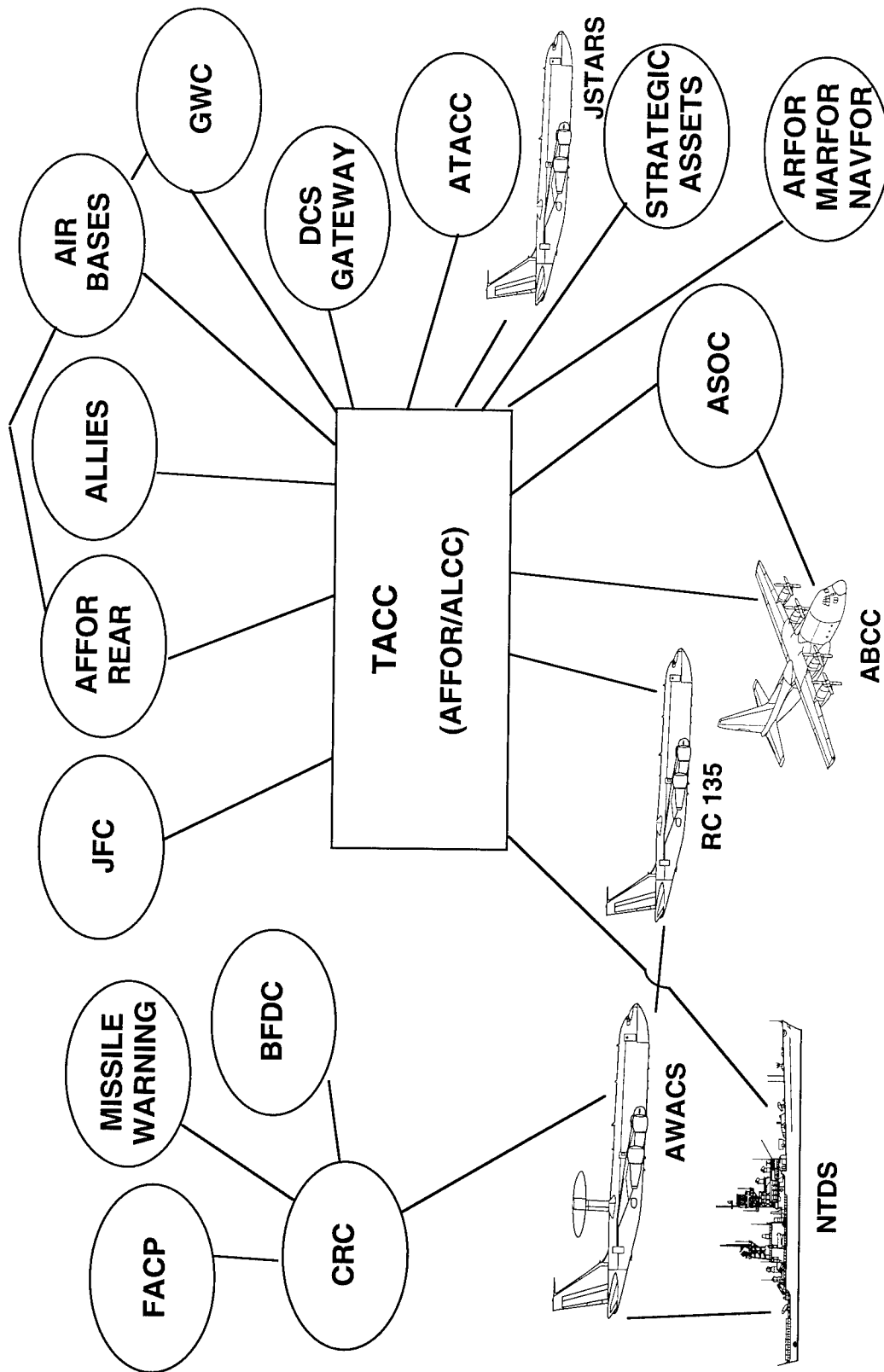
## TACTICAL AIR WARFARE COMMUNICATIONS

UNCLASSIFIED



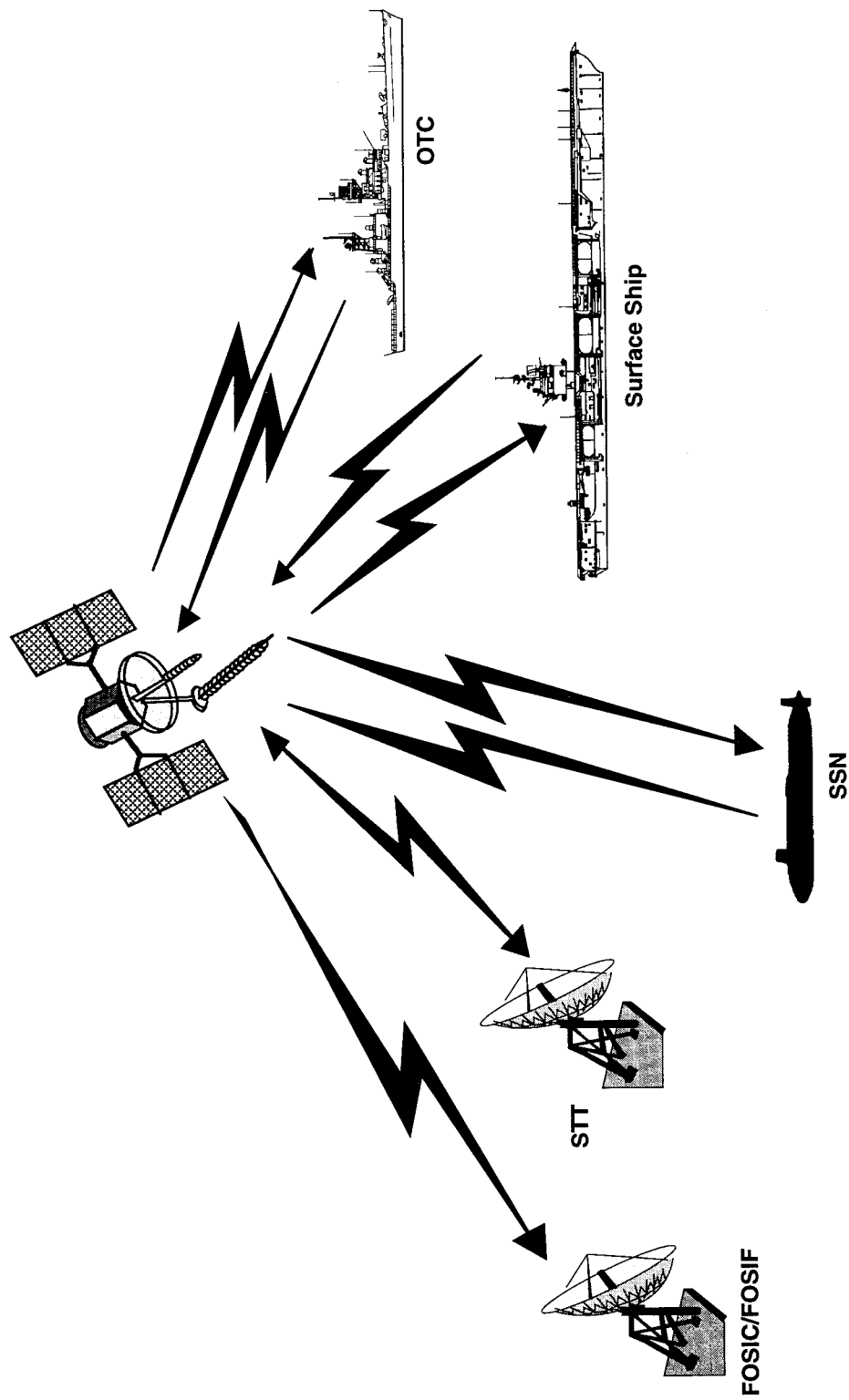
# AIR WARFARE CONCEPT OF EMPLOYMENT

UNCLASSIFIED



# OFFICER-IN-TACTICAL-COMMAND INFORMATION EXCHANGE SYSTEM (OTCIXS)

UNCLASSIFIED



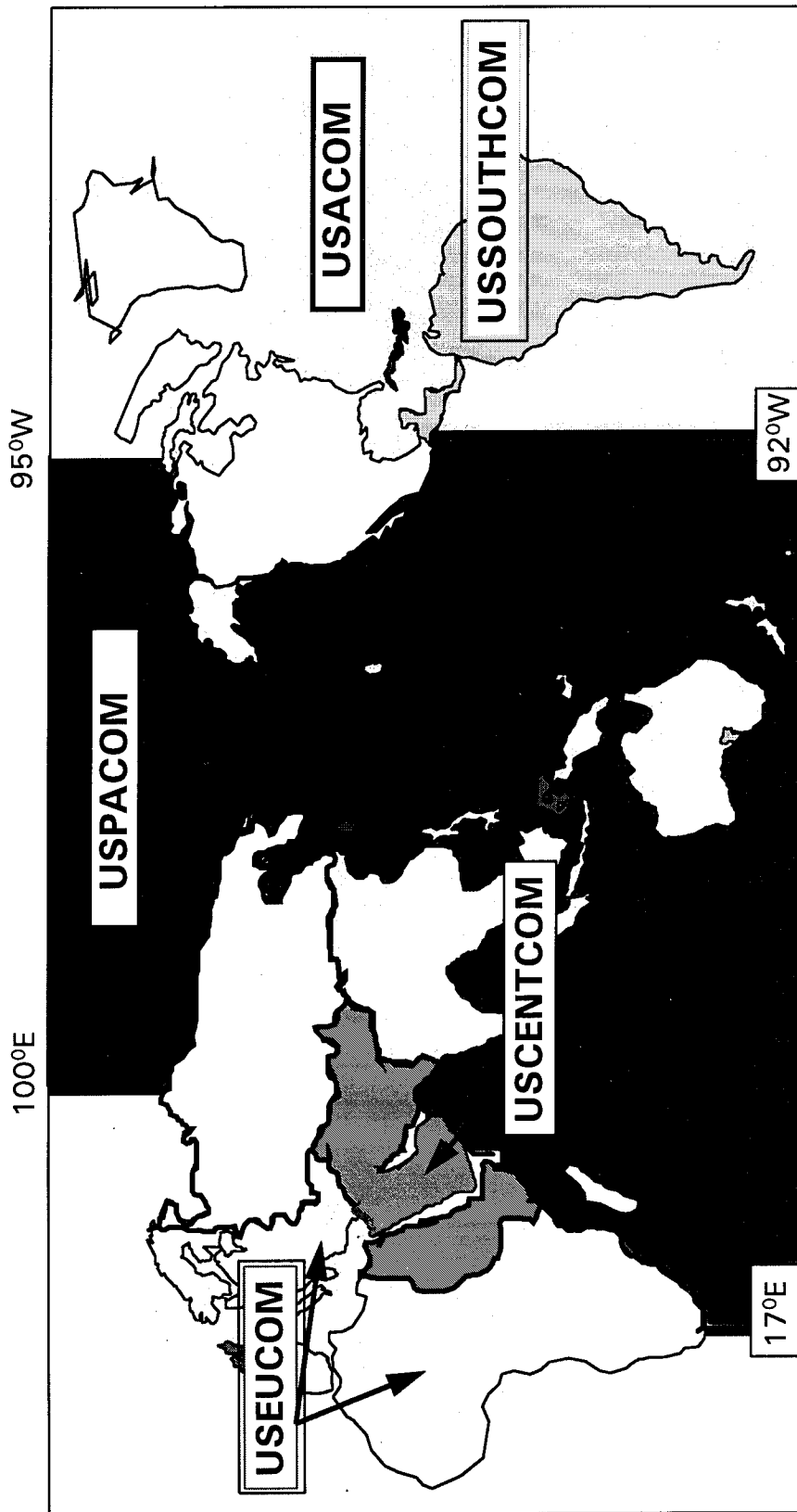


## Appendix A

### CINC Missions and Major C4 Systems

This Appendix provides an overview of the Organization, Mission and Major Systems for each of the unified and specified commands. The purpose of this appendix is serve as a helpful aid in placing key C4I systems in an operational context. There exists a considerable amount of overlap in the support which each of the key systems provides to any one Command, and each command has flexibility in the use of these systems in performing the assigned mission. The amount and type of C4I support requirements varies significantly across the Commands.

## CINC AORS



## NON-GEOGRAPHIC CINCS

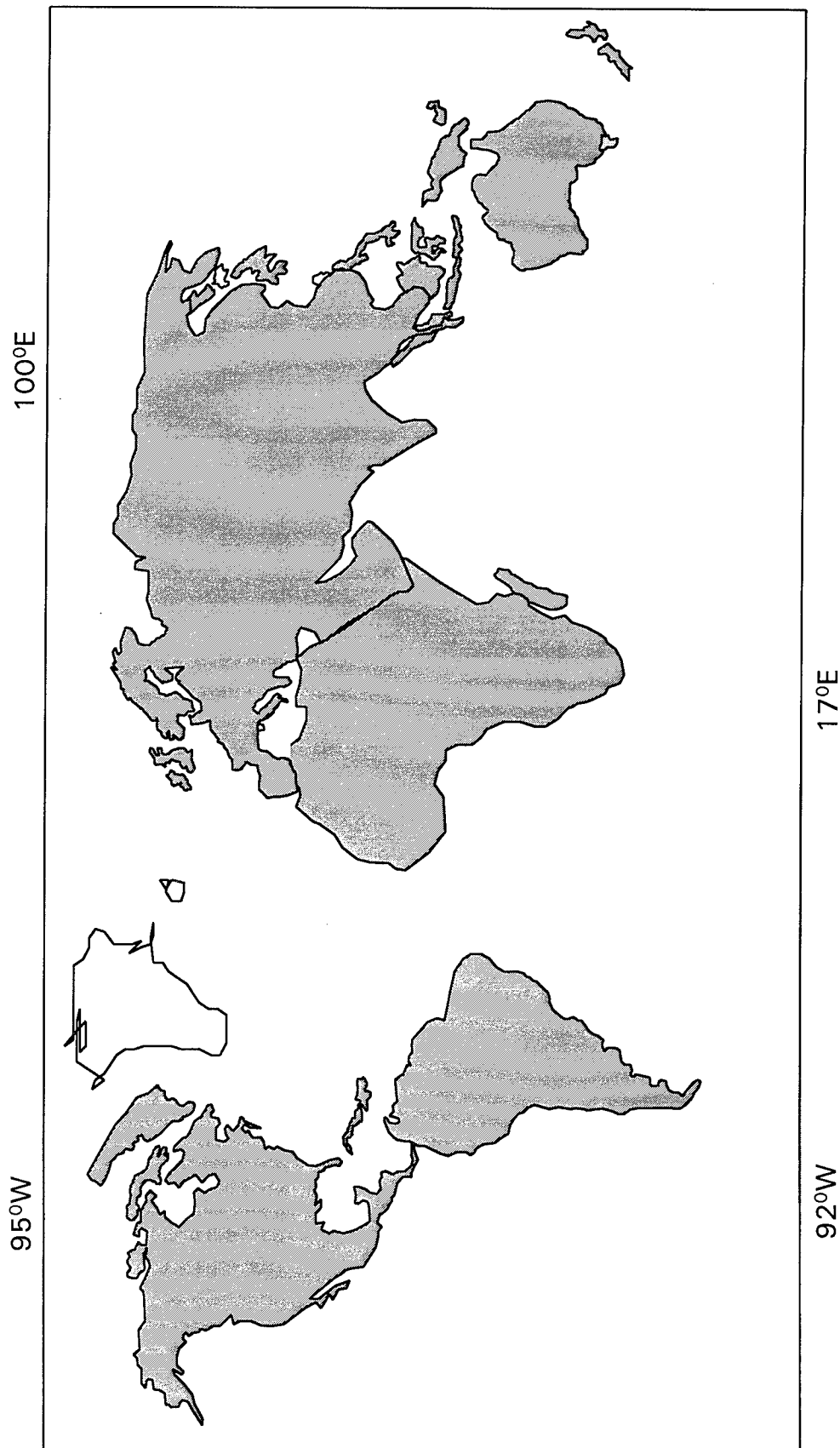
USTRANSCOM USSPACECOM USSOCOM USSTRATCOM



## **U.S. ATLANTIC COMMAND MISSION**

- **Deter Military Attacks Against the US, Defend Atlantic Lines of Communications, and Protect Vital US Interests in the AOR.**
- **Provide Joint Force Training for Designated CONUS-Based Forces.**
- **Construct Joint Force Packages Ready to Deploy in Graduated Levels and Manage Joint Deployments in Crises.**
- **Support UN Peacekeeping Operations and Provide Assistance During Natural Disasters.**
- **Provide For Land Defense of CONUS and Provide Military Support to Civilian Authorities.**

## U.S. ATLANTIC COMMAND AOR



## U.S. ATLANTIC COMMAND MAJOR C4 SYSTEMS

### Surveillance

OSIS BASELINE UPGRADE  
JSTARS  
ROTHR  
SOSUS, SURTASS, POST  
AWACS

### Communications

INMARSAT, UHF SATCOM, DSCS, QUICKSAT  
DSNET3, AUTODIN, DDN, DSSCS  
FLTBCST, TADIL A, B, C J,  
TACTICAL - MSE, GMF, TRC-170, HF/UHF  
LANT INTEGRATED MESSAGE SYSTEM

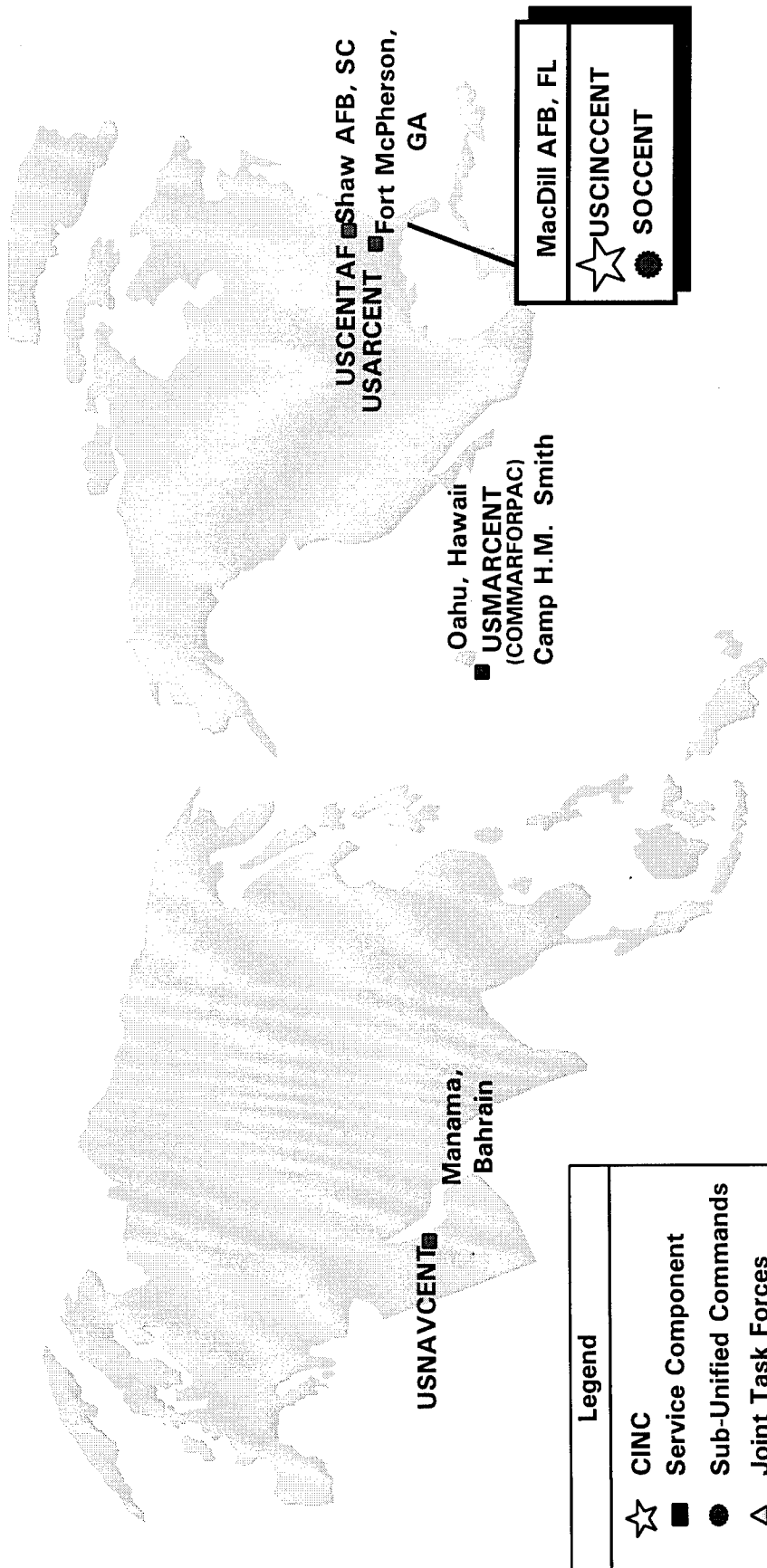
### Facilities

COMMAND CENTERS: ICELAND,  
NORFOLK, KEY WEST, AZORES,  
BERMUDA, CUBA  
ASWOCs: ICELAND, PUERTO RICO  
NOVA SCOTIA, FLORIDA, MAINE  
AIC CICC, JOCC, ABCCC

### C2/Intelligence/Planning

JDISS - LANTCOM, CTAPS, JOTS-II  
ADNET, NTCs-A, FDDS - LANTFLT,  
TFCC- LANTFLT, TIMS - LANTFLT,  
OTIXIS, SSIXS, TADIXS, JTIDS  
IDHS/LANT THEATER INTEL,  
WWMCCS/GCCS, JVIDS  
DIAOLS/COINS  
RIVET JOINT

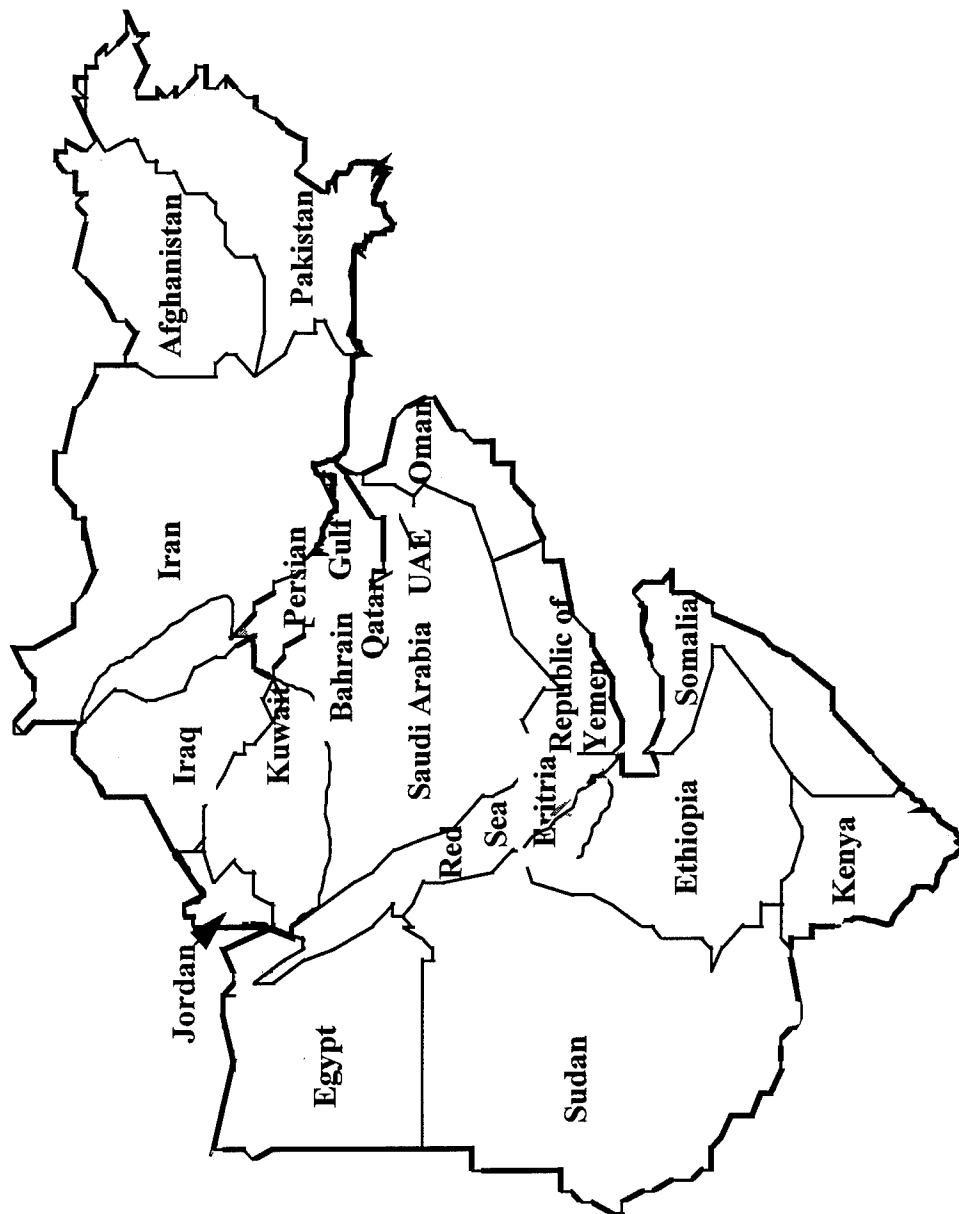
# U.S. CENTRAL COMMAND ORGANIZATION



## **U.S. CENTRAL COMMAND MISSION**

- **Ensure International Market Access to Gulf Oil and Freedom of Navigation through the Region.**
- **Counter Outside Influence, Strengthen Regional Stability, Limit Ability of Unfriendly Regimes to Destabilize or Subvert Our Allies.**
- **Deter and Counter Hostile Aggression Against US Interests and Assist Friendly Nations in Improving Their Defense.**
- **Slow Proliferation of Weapons of Mass Destruction, Counter the Threat of Terrorism and Combat the Flow of Illegal Drugs From the AOR.**
- **Conduct Humanitarian Assistance, Disaster Relief, and Plan for Evacuations as Directed.**

## U.S. CENTRAL COMMAND AOR



## U.S. CENTRAL COMMAND MAJOR C4 SYSTEMS

### Surveillance

JSTARS

AWACS

TACTICAL SYSTEMS

### Facilities

COMMAND CENTERS: TAMPA, FL,

SHAW AFB NORTH CAROLINA,

BAHRAIN,

FT McPHERSON GEORGIA,

CAMP SMITH HI,

### Communications

DSCS AND COMMERCIAL SAT -Ku BAND

UHF SATCOM

DISNET-3, DTS, DCS-HF ENTRY

TACTICAL - MSE, GMF, TRC-170, HF/UHF

SINGGARS, SW ASIA TELECOM SYSTEM

WICP, TCCE-CA, MARBLEWOOD,

### C2/Intelligence/Planning

CTAPS, JOTS-II, SORTS

CSIDS, ISS, C2IPS, ADNET

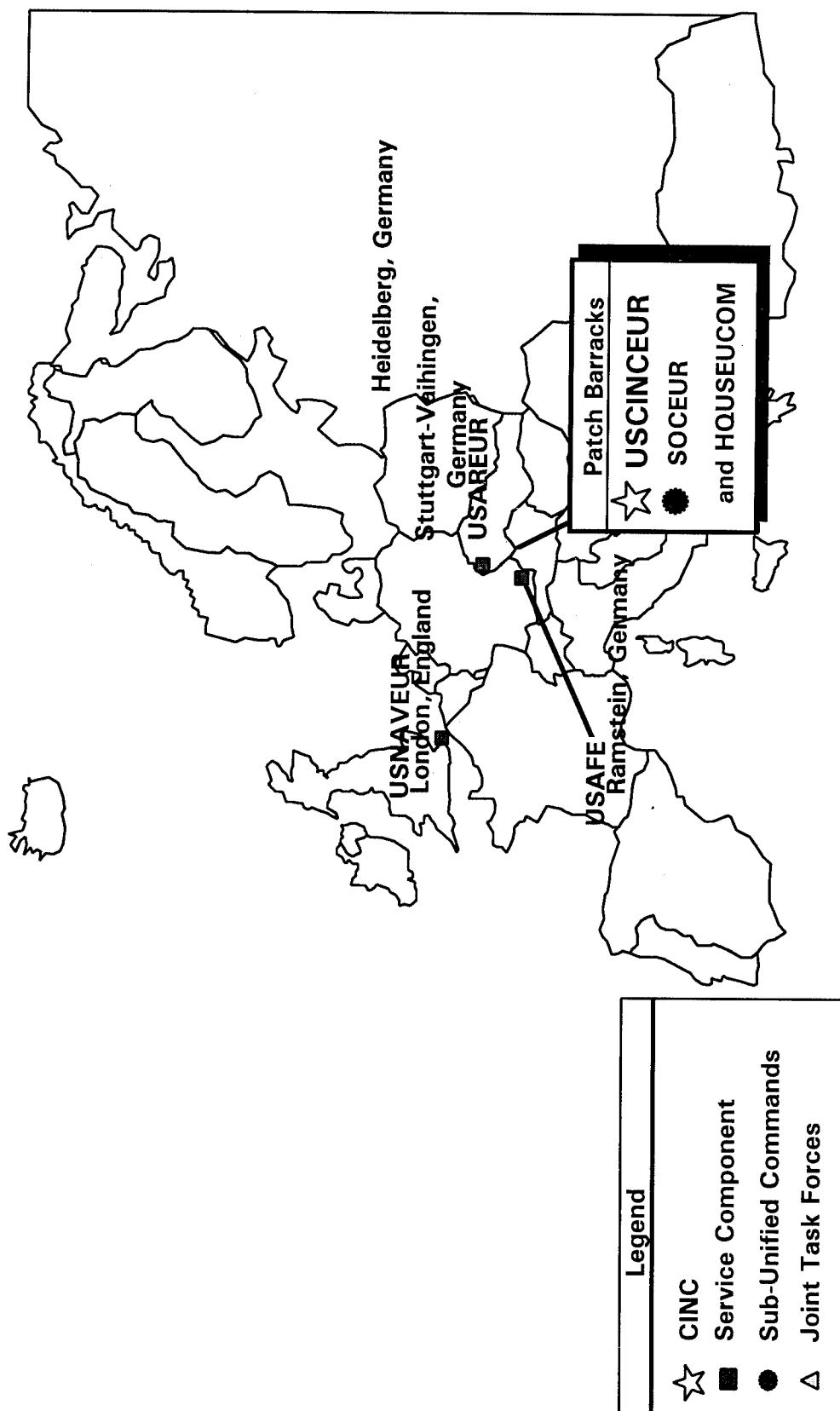
JWICS, GPS, CCS, NPES

DIDHS/LDIS, THEATER INTEL,

WWMCCS/GCCS, JVIDS, JDISS,

RIVET JOINT

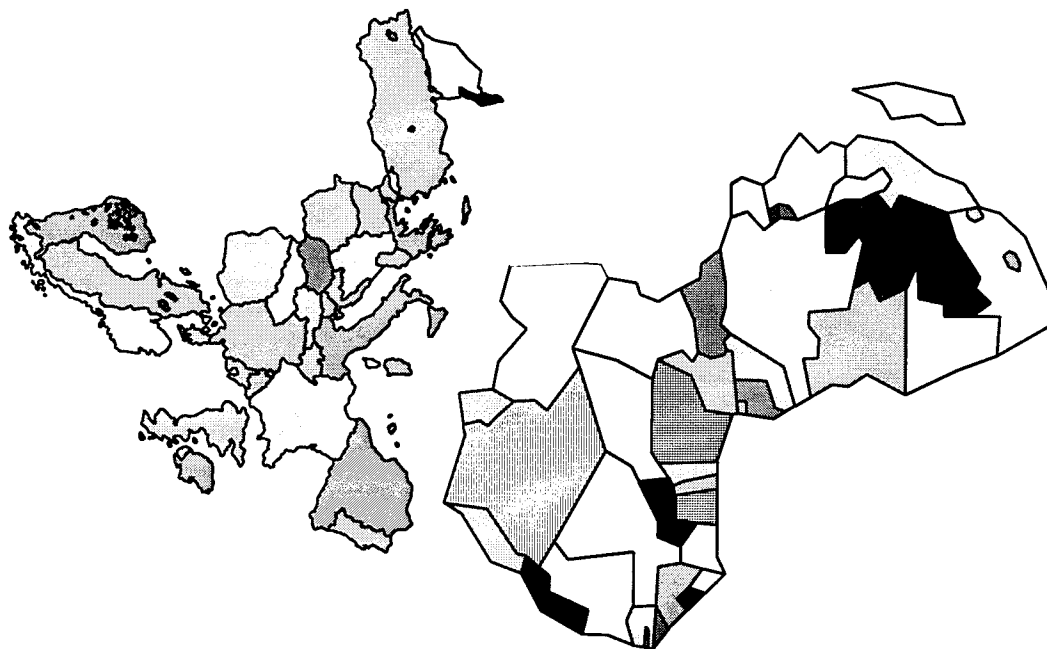
## U.S. EUROPEAN COMMAND ORGANIZATION



## **U.S. EUROPEAN COMMAND MISSION**

- **Be Prepared to Simultaneously Conduct Military Operations as a Supported and Supporting CINC Across Spectrum From Humanitarian Operations Through Conventional Conflict.**
- **Provide Combat-Ready Forces to Allied Command Europe or US Combatant Commands.**
- **Perform Crisis Management, Joint Precision Interdiction and Conduct Unilateral or Coalition Operations.**

## U.S. EUROPEAN COMMAND AOR



## U.S. EUROPEAN COMMAND MAJOR C4 SYSTEMS

### Surveillance

JSTARS  
ITW/AA VIA SPACECOM, DSP  
AWACS  
TACTICAL SENSORS

### Communications

INMARSAT, DSCS/JRSC  
UHF SATCOM (FLTSAT, AFSATCOM)  
DSN, DDN, DCS-HF ENTRY, AUTODIN  
DEB, DMIP, DSIR  
TACTICAL - MSE, GMF, TRC-170, HF/UHF  
LINK 1, LINK  
COMMERCIAL MIL LANDLINES  
NATO SATELLITE

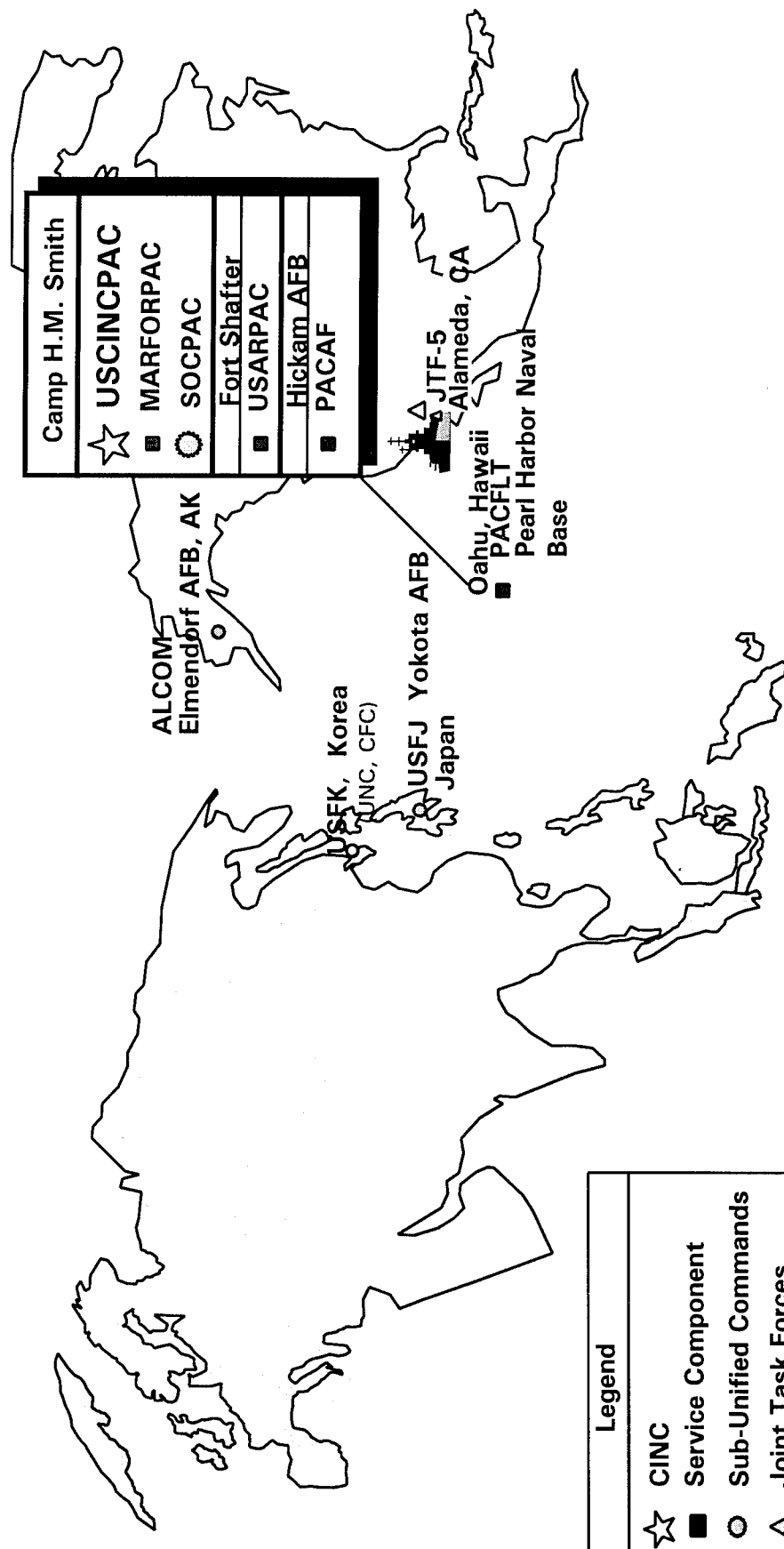
### Facilities

COMMAND CENTERS: STUTTGART,  
RAMSTEIN SEMBACH GERMANY,  
LONDON AND MILDENHALL UK,  
NAPLES, AVIANO, GAETA ITALY,  
TSCs - ROTA SPAIN, SIGONELLA  
ITALY

### C2/Intelligence/Planning

EISS, STACCS-E, CTAPS, JOTS-II  
NTCS-A, TAOM, WCCS  
LINCS, EFRRS, JSMS, JMIE  
OTIXIS, CUDIXS, TADIXS, JTIDS  
IDHS/LANT THEATER INTEL,  
WWMCCS/GCCS, JVIDS, JDISS,  
JWICCS, SID, UCCS, ECCCS  
RIVET JOINT

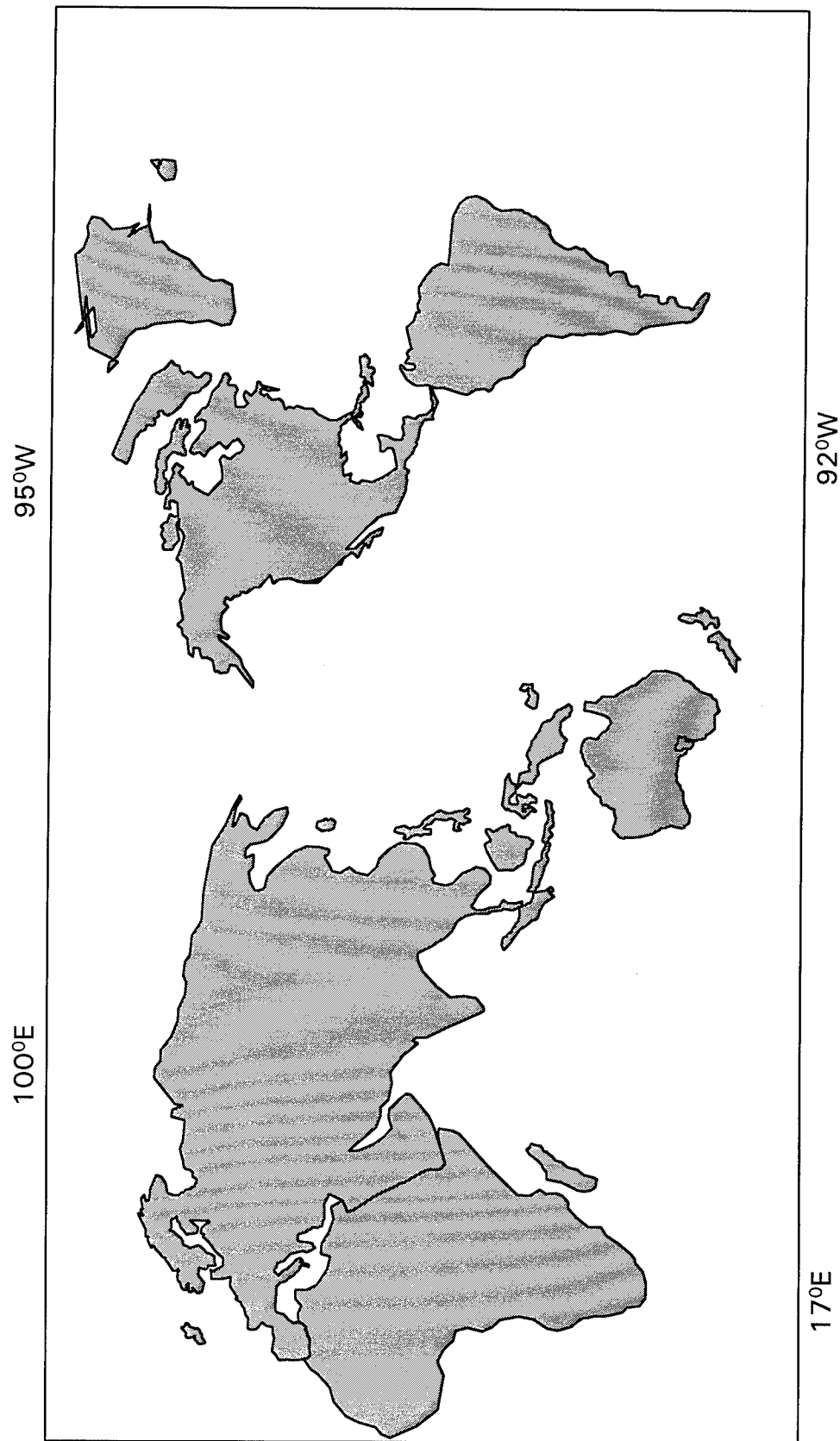
## U.S. PACIFIC COMMAND ORGANIZATION



## **U.S. PACIFIC COMMAND MISSION**

- **Defend the US Against Attacks Through the Pacific Region.**
- **Promote Peace, Democracy and Freedom In PACOM AOR.**
- **Protect and Promote US Interests By:**
  - **Detering Conflict Through Forward Presence of Combat Ready US and Allied Forces.**
  - **Enhancing Positive Relations Among Nations.**
  - **Strengthening Political, Economic and Security Cooperation.**

## U.S. PACIFIC COMMAND AOR



## U.S. PACIFIC COMMAND MAJOR C4 SYSTEMS

### Surveillance

JSTARS  
IFF - BATTLEFIELD  
E-2C, EA-6B, UAVs  
SOSUS, SURTASS  
AWACS  
OSIS BASELINE UPGRADE

### Communications

INMARSAT, INTELSAT,, DSCS/JRSC  
UHF SATCOM (FLTSAT, AFSATCOM)  
MILNET, DSN , DDN, DTS, DCS-HF ENTRY  
FLTBCST, TADIL A, B, C J,  
TACTICAL - MSE, GMF, TRC-170, HF/UHF  
SPINTCOM, CRITICOM, NSTS, JCMC  
HAWS, MARVAN SYSTEM 75, PACAF2N,  
NEWSDEALER/STREAMLINER

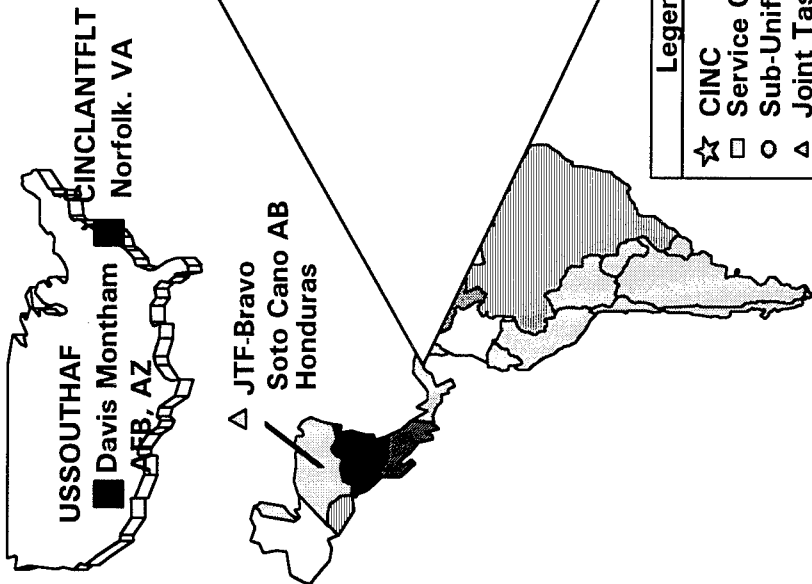
### Facilities

COMMAND CENTERS: FT SHAFTER,  
HICKAM, PEARL HARBOR,  
CAMP SMITH HI, SAN DIEGO AND  
ALAMEDA CA, ALASKA, GUAM,  
YOKOSUKA AND YOKOTA JAPAN,  
SEOUL, OSAN, CHINHAE KOREA

### C2/Intelligence/Planning

JAIS - PAC, OSS, CTAPS, JOTS-II  
CIDSS, NTCS-A, CATIS, ADNET  
TFCC- LANTFLT, TIMS - LANTFLT,  
OTIXIS, SSIXS, TADIXS, JTIDS  
IDHS/LANT THEATER INTEL,  
WWMCCS/GCCS, JVIDS, JDISS, KISS  
TACCIMS, CTIS, CASES, KCSS  
COINS

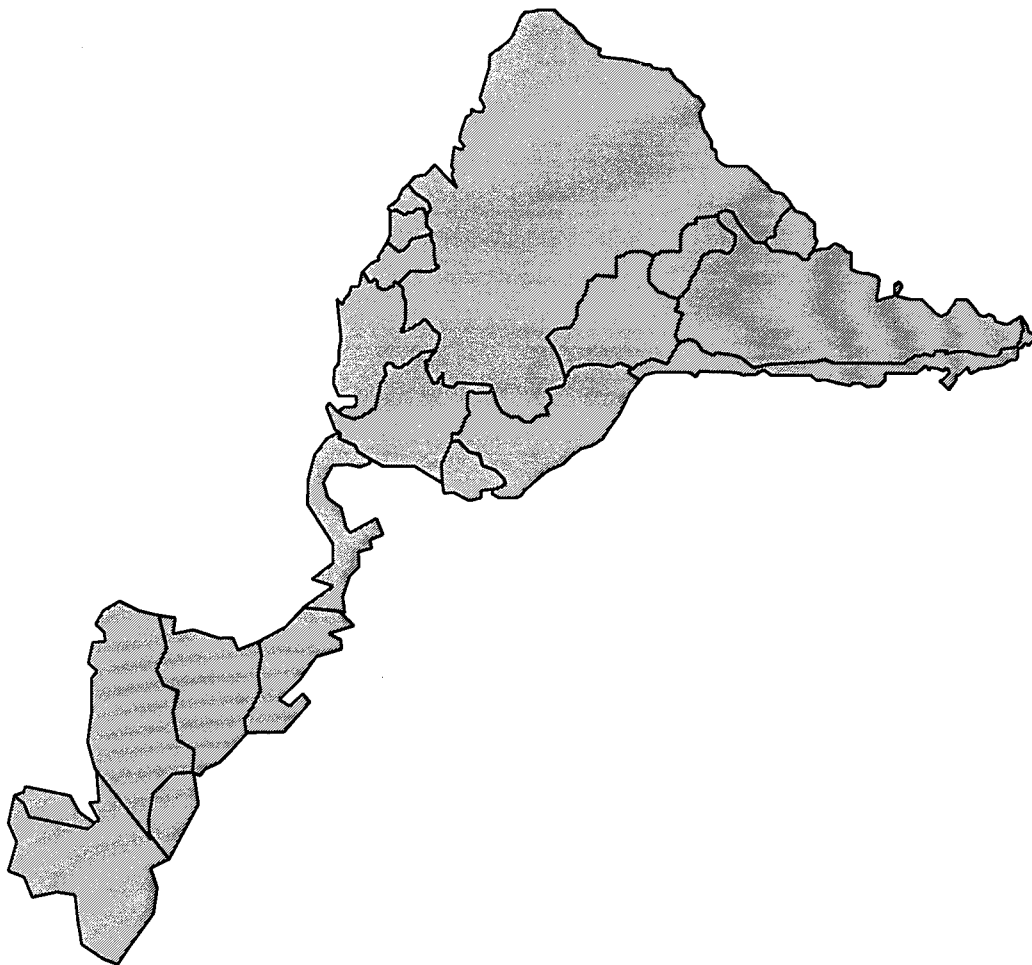
# U.S. SOUTHERN COMMAND ORGANIZATION



## **U.S. SOUTHERN COMMAND MISSION**

- **Assist Host Nations in Combating Illicit Drug Production and Trafficking.**
- **Promote Regional Stability.**
- **Ensure Defense of the Panama Canal.**
- **Enhance the Professionalism of the National Military Forces of Central and South America.**

## U.S. SOUTHERN COMMAND AOR



## U.S. SOUTHERN COMMAND MAJOR C4 SYSTEMS

### Surveillance

CARIBBEAN BASIN RADAR  
ANDEAN RIDGE RADAR NET  
AWACS  
E-2C, U-2  
OCEAN-BASED AEROSTAT

### Facilities

COMMAND CENTERS: QUARRY  
HEIGHTS, HOWARD AFB, COROZAL,  
FT AMADOR, FT SHERMAN, FT  
CLAYTON PANAMA  
SOTO CANO AB, HONDURAS

### Communications

DSCS/GMF, INTELSAT -MINIMUM  
ALASCOM, PANAMSAT, IDB SATELLITES  
UHF TACSAT, SCAMPI  
DDN DTS, MARS  
AUTODIN, DSN USSOUTHCOM SWITCHED  
VOICE AND MESSAGE NETS  
ITT SUBMARINE CABLE, GLOBAL USER HF,  
PANAM TERRESTRIAL SYSTEM, RECIM AND  
IANTM HF, MISSION RADIO NET, RSVN

### C2/Intelligence/Planning

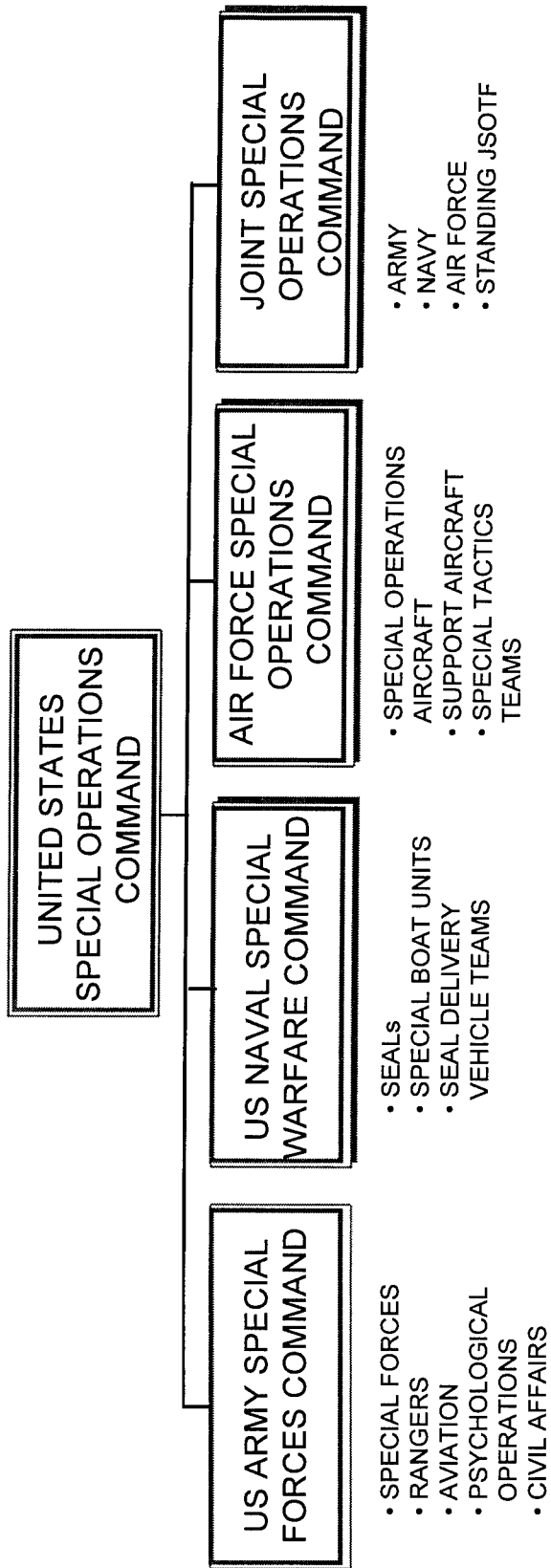
ADNET, CM/CMS, SIMS  
DIAOLS/COINS  
WWMCCS/GCCS, JVIDS,  
DITS, CATIS, DODIIS  
IDHS- II  
SOCRATES



## **U.S. SPECIAL OPERATIONS COMMAND MISSION**

- **Prepare Combat-Ready Special Operations Forces (Special Operations, Psychological Operations and Civil Affairs Forces) and Provide them to Other Unified CINCS for Assigned Missions.**
- **Exercise Command of Selected Special Operations Missions as Directed.**
- **Primary Missions Include:**
  - **Unconventional Warfare**
  - **Direct Action**
  - **Special Reconnaissance**
  - **Foreign Internal Defense**
  - **Counterterrorism**

## U.S. SPECIAL OPERATIONS COMMAND COMPONENT COMMANDS



## U.S. SPECIAL OPERATIONS COMMAND MAJOR C4 SYSTEMS

### Surveillance

NATIONAL ASSETS  
THEATER ASSETS ORGANIC  
TO THEATER CINCS AS  
AVAILABLE

### Facilities

COMMAND CENTERS:  
TAMPA AND HURLBURT FIELD  
FLORIDA,  
FT BRAGG, NORTH CAROLINA  
CORONADO, CALIFORNIA

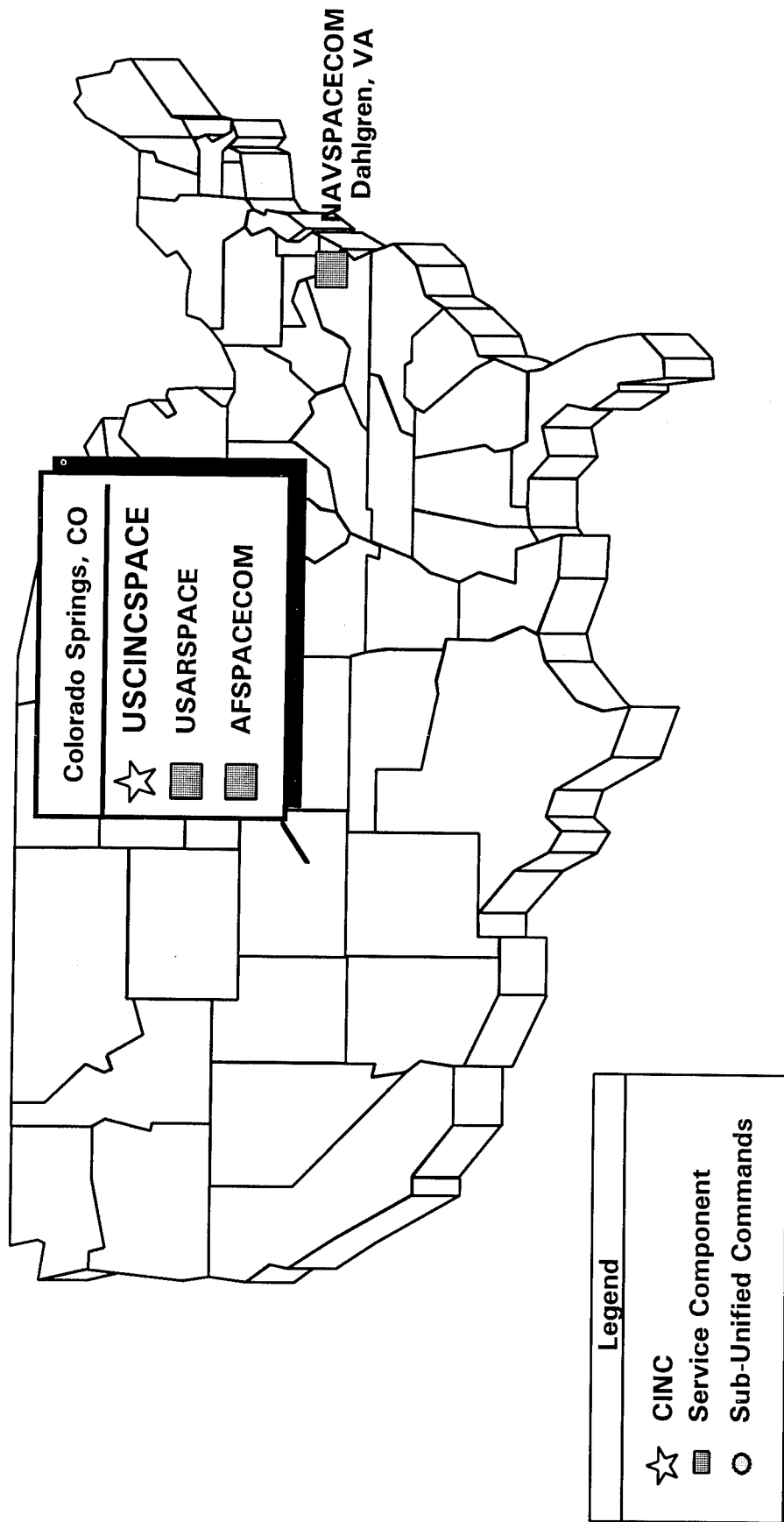
### Communications

UHF TACSAT, SCAMPI  
DDN AUTODIN, DSN  
COMMERCIAL T-1  
JCSAN, NMCS "SNATCHER"  
SINGGARS  
GTE MOBILE NET

### C2/Intelligence/Planning

ADNET  
IDHS  
SORTS, JOPES, SOFPARS  
WWMCCS/GCCS, CSIDS,  
DITDS, SOCSIDS, AFDIGS  
SOCRATES, COMEDS  
AF GLOBAL WEATHER CENTRAL

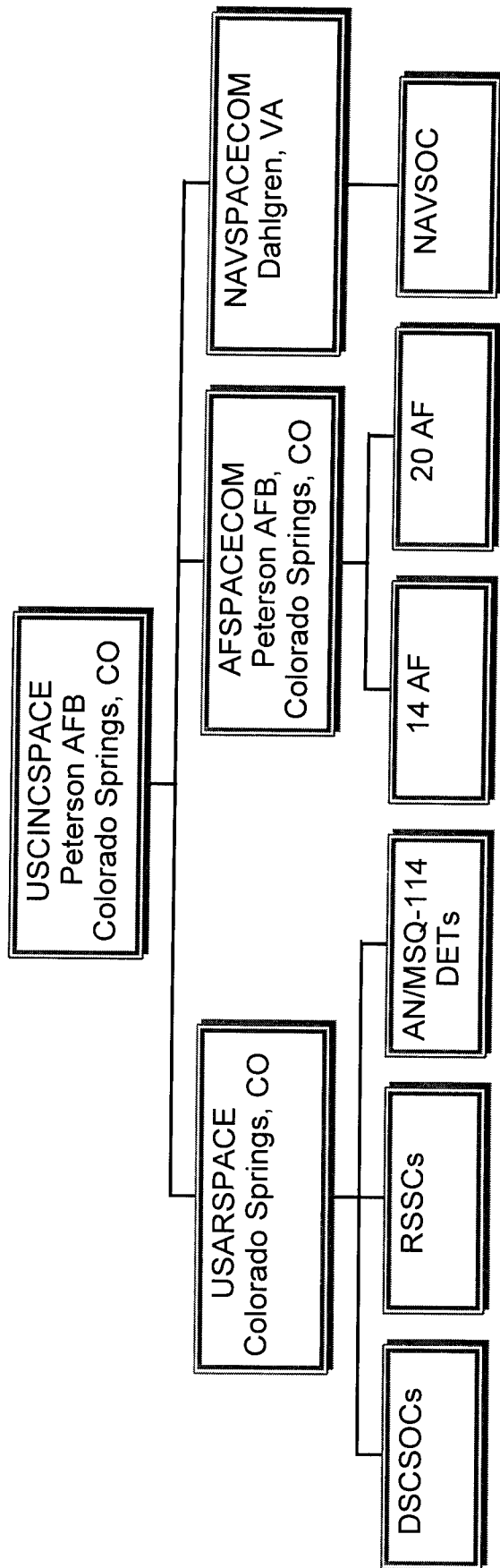
# U.S. SPACE COMMAND ORGANIZATION



## **U.S. SPACE COMMAND MISSION**

- **Mission: Space Operations:**
  - **Space Control - Surveillance, Protection, Counterspace.**
  - **Force Applications - Ballistic Missile Defense Planning and Concept of Operations.**
  - **Force Enhancement - Communications, Navigation, Intelligence and Surveillance, Environmental Monitoring, Mapping, Charting and Geodesy.**
  - **Space Support - Launch, Service and Recovery, Satellite Control, Integrated Logistics.**
  - **Space and Missile Warning - Detect, Assess and Warn of Space Attacks and Ballistic Missile Attacks.**

## U.S. SPACE COMMAND COMMAND STRUCTURE



## U.S. SPACE COMMAND MAJOR C4 SYSTEMS

### Surveillance

PAVE PAWS  
BMEWS  
COBRA DANE, DMSP  
PIRINCLIK, CAVALIER  
MWC/CMC, DSP, MOTIF  
GEODSS, NAVSPASUR

### Communications

DSCS/JRSC  
UHF SATCOM (FLTSAT, AFSATCOM)  
DSN , SCT, ISST, JCSAN  
AUTODIN, COMMERCIAL CIRCUITS, GETS  
SURVIVABLE COMM INTEGRATION SYSTEM  
COMM SYSTEM SEGMENT REPLACEMENT

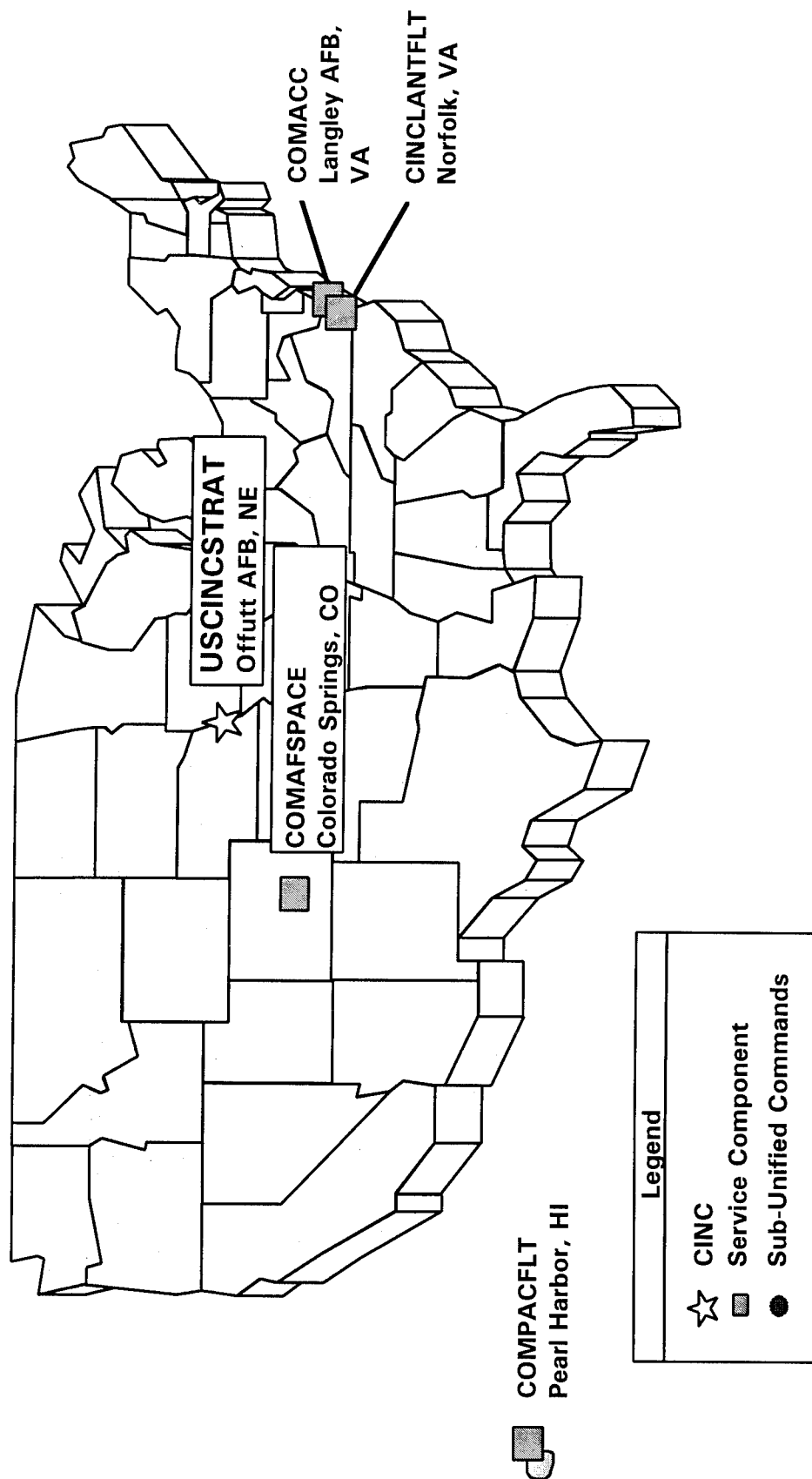
### Facilities

CHEYENNE MOUNTAIN COMPLEX:  
- SPACE CONTROL CENTER  
- MISSILE WARNING CENTER  
- AIR DEFENSE OPS CENTER  
- NORAD/USSPACECOM CMD CNTR  
MCCC

### C2/Intelligence/Planning

NUICCS  
IDHS  
WWMCCS/GCCS  
GPS  
SPACE SURVEILLANCE NETWORK

## U.S. STRATEGIC COMMAND ORGANIZATION

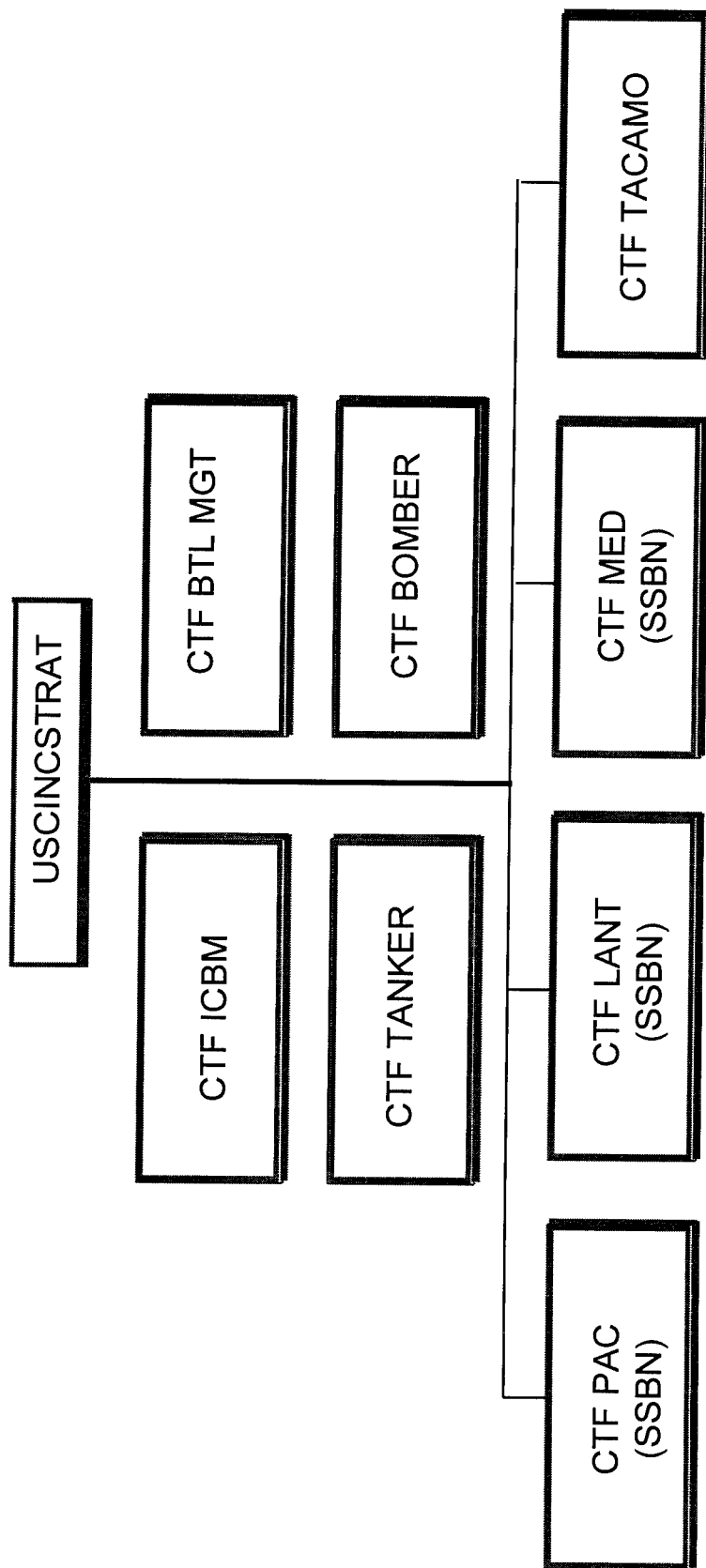


## **U.S. STRATEGIC COMMAND MISSION**

- **Deter a Major Military Attack on the U.S. and Its Allies; Should Deterrence Fail, Employ Forces to End the Conflict.**
- **Primary Responsibility For Strategic Offensive and Battle Management/Reconnaissance Forces to Support National Objectives.**
  - **Assigned ICBMs, SSBNs, and Battle Management Assets.**
  - **Service Components/Other Unified Commands Provide Bombers, Recce Assets, Tankers etc..**
  - **Exercise OPCON of Alert and Generated Strategic Nuclear Forces.**
  - **Exercise OPCON of Other Assigned Assets Through Service Component Commanders.**

## USSTRATCOM COMMAND RELATIONSHIPS

### Generated/On Patrol



## U.S. STRATEGIC COMMAND MAJOR C4 SYSTEMS

### Surveillance

PAVE PAWS  
BMEWS  
NUCLEAR DETECTION SYSTEM  
COBRA DANE  
PARCS  
DSP

### Communications

DSCS/JRSC  
UHF SATCOM (FLTSAT, AFSATCOM)  
DSN, SCT, ISST, JCSAN  
GLOBAL HF SYSTEM, MOBILE COMM NET  
AUTODIN, COMMERCIAL CIRCUITS, SVS  
GWEN, GETS  
FIXED SUBMARINE BCST SYSTEM  
DEFENSE DISSEMINATION SYSTEM  
ELF/VLF/LF

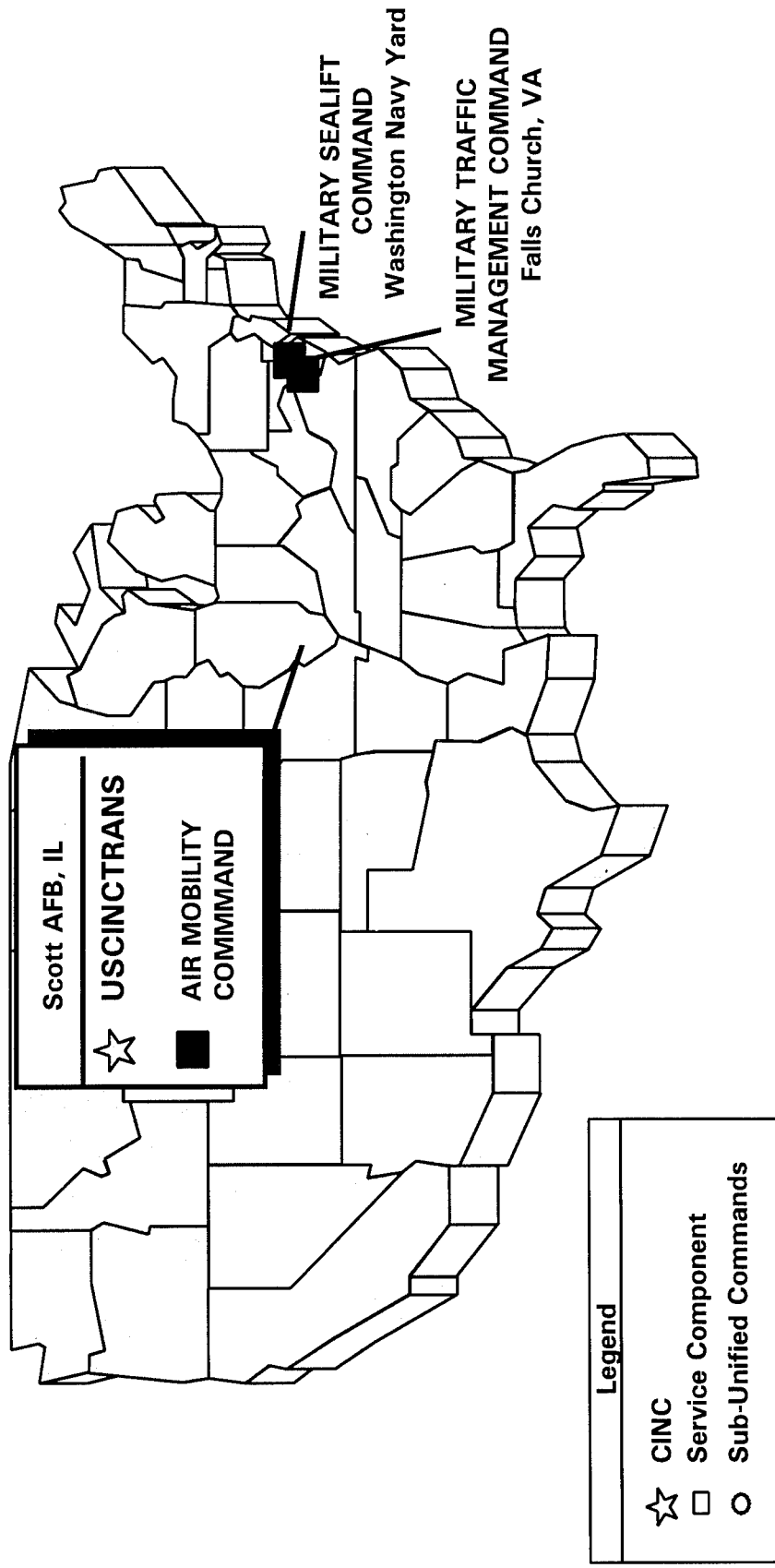
### Facilities

COMMAND CENTERS: STRATCOM  
HQ OFFUTT AFB, NEBRASKA  
CINC MOBILE ALT HQ  
STRATCOM ABCP, TACAMO  
APCC, STRATEGIC JOINT  
INTELLIGENCE CENTER

### C2/Intelligence/Planning

SACCS/SOCS, SWPS, SMDPS, SATS  
SLBM ADAPTIVE TARGETING,  
RIVET JOINT, TARPS, COBRA BALL,  
COMBAT SENT, MIMES, MAXI, TIBS,  
CATIS, UMPS, JTIDS/TIBS, E-DITS,  
IDHS STRAT INTEL NET (SINET),  
VISTA, STEPS-III, NPES,  
FORCE MANAGEMENT, RTAPS  
WWMCCS/GCCS

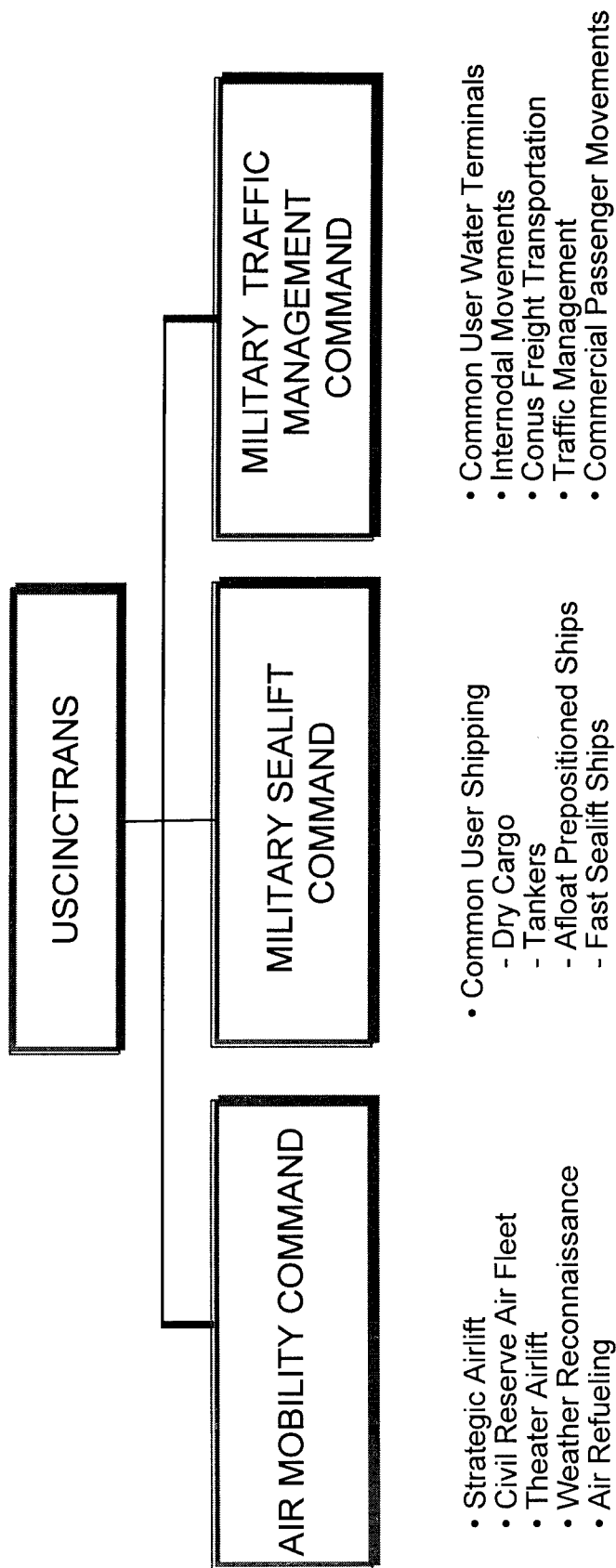
## U.S. TRANSPORTATION COMMAND ORGANIZATION



## **U.S. TRANSPORTATION COMMAND MISSION**

**Mission: To Provide Air, Land and Sea  
Transportation for the Department of  
Defense, Both in Time of Peace and War.**

## U.S. TRANSPORTATION COMMAND COMPONENT'S MISSIONS



## U.S. TRANSPORTATION COMMAND MAJOR C4 SYSTEMS

### Surveillance

#### NATIONAL ASSETS

### Communications

DDN AUTODIN, DSN  
COMMERCIAL NETWORKS  
DSCS

### Facilities

COMMAND CENTERS:  
SCOTT AFB, BELLEVILLE, IL  
WASHINGTON NAVY YARD  
MTMC, FALLS CHURCH,  
VIRGINIA

### C2/Intelligence/Planning

GLOBAL TRANSPORTATION NET  
ATCC, ADAM III, ADANS  
CMARPS, CHCS  
CODES, WWMCCS/GCCS  
COMPASS, DASS,  
CFM, DART, GDSS  
LIFTMNGR

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## Appendix B Acronym Index

Acronym	Title	Page
	ALARM	II-2
	ACE High Network	II-2
ACDS	Advance Combat Direction System	II-2
ACM MPS	Advanced Cruise Missile (ACM) Mission Planning System	II-2
ADC	Advanced Data Controller	II-3
AFATDS	Advanced Field Artillery Tactical Data System)	II-3
ANDVT	Advanced Narrowband Digital Voice Terminal	II-3
APS	Advanced Planning System	II-3
ASCAMP	Advanced Single Channel Manpack	II-3
ASICS	Advanced Support Interactive Control System	II-3
ATACC	Advanced Tactical Air Command Center	II-4
ATARS	Advanced Tactical Airborne Reconnaissance System	II-4
ADAM III	Aerial Port Documentation and Management System	II-4
APES	Aeromedical Patient Evacuation System	II-4
ACS	Afloat Correlation System	II-4
APS	Afloat Planning System	II-5
ACAS	Air Carrier Analysis Support	II-5
ACCS	Air Command And Control System	II-5
AFARN	Air Force Air Request Net	II-6
AFC2S	Air Force Command and Control System	II-6
AFNET	Air Force Integrated Communications Network.	II-6
AFMSS	Air Force Mission Support System	II-6
AFRCC-MIS	Air Force Rescue Coordination Center-Management Information System	II-6
AFORMS	Air Force Resource Management System	II-6
AFWCCS	Air Force Wing Command And Control System	II-6
ATCC	Air Terminal Communication and Control System	II-7
AFAS	Air Vehicle Force Application System	II-7
ABCCC	Airborne Battlefield Command and Control Center	II-7
AWACS	Airborne Warning and Control System Improvements (AWACS Improvement)	II-7
ADANS	Airlift Deployment Analysis System	II-7
ASIFICS	Airlift Services Industrial Fund Integrated Computer System	II-8
ADS	Airspace Deconfliction System	II-8
ARS	Alaskan Radar System (ARS).	II-8
ASAS	All Source Analysis System	II-8
ADAMS	Allied Deployment And Movement System.	II-9
ACCM	Alternate Command Center Mobile	II-9
ASH	Alternate System Hq	II-9

Acronym	Title	Page
AMW OTH C2	Amphibious Warfare Over-the-Horizon (OTH) C2	II-9
	AN/SMQ-11 Satellite Receiver/Recorder	II-10
	AN/TRC-170(V)3 Troposcatter Radio Set	II-10
	AN/UJYQ-3A Air-Transportable Direct Air Support Central (DASC)	II-10
AMP	Analysis of Mobility Platform	II-10
ARM DECOY	Anti-Radiation Missile Decoy	II-11
ADNET	Anti-Drug Network	II-11
ASWOC	Antisubmarine Warfare Operations Center Upgrade	II-11
AFSTRS	Armed Forces Satellite Transmitted Radio Service	II-11
ABCS	Army Battlefield Command System	II-11
ACCS	Army Command And Control System (replaced by ABCS)	II-11
ARCIS	Army Company Information System	II-12
ADDS	Army Data Distribution System	II-12
AFMIS	Army Food Management Information System	II-12
AGCCS	Army Global Command and Control System	II-12
AISYSCON	Army Integrated System Control	II-12
ASOCNet	Army Special Operations Command Network	II-12
ATCCS	Army Tactical Command and Control System	II-13
AWIS	Army World Wide Command and Control System (WWMCCS) Information System	II-13
	ASSC Communications Upgrade	II-13
ATLASS	Asset Tracking Logistics and Supply System	II-13
ATLASS II	Asset Tracking Logistics and Supply System II	II-13
ATM	Asynchronous Transfer Mode	II-14
AMHS	Automated Message Handling System	II-14
APES	Automated Patient Evacuation System	II-14
AUTODIN	Automatic Digital Network	II-14
AUTO ID	Automatic Identification Program	II-14
AUTOSEVOCOM	Automatic Secure Voice Communications Network	II-14
AUTOVON	Automatic Voice Network	II-14
BITS	Base Information Transfer System	II-15
BASS	BCE Automated Support System	II-15
BGPHE-S	BGPHE-S Surface	II-15
BISDN	Broadband Integrated Services Digital Network	II-15
	C4I for the Warrior	II-15
CCRS	Canadian Coastal Radar System	II-15
	CANEWARE	II-16
CMOS	Cargo Movement Operations System	II-16

Acronym	Title	Page
	CAVALIER RADAR	II-16
CARCN	Central American Regional Communications Network	II-16
CMU	Cheyenne Mountain Upgrade	II-16
CMAH	CINC's Mobile Alternate Headquarters	II-16
CIVIC	Civilian Vulnerability Indicator Code	II-16
	CLASSIC CENTERBOARD	II-17
	CLASSIC FLAGHOIST	II-17
CRMA	Collection Requirements Management Application	II-18
COAST	Combat Area Support Terminal	II-18
	Combat DF	II-18
CIS	Combat Intelligence System	II-18
CNR	Combat Net Radio	II-19
COIC	Combat Operations Intelligence Center	II-19
CPCS	Combat Personnel Control System	II-19
CSSCS	Combat Service Support System	II-19
CTIS	Combat Terrain Information System	II-19
CMARPS	Combined Mating and Ranging Planning System	II-19
	Combo (Combination) Radio	II-19
C2IPS	AMC Command and Control Information Processing System	II-20
C2P	Command and Control Processor	II-20
CCIP	Command Center Improvement Program	II-20
CCPDS-R	Command Center Processing and Display System-Replacement	II-20
CINCNET	Commanders in Chief Network	II-20
CTIS	Command Tactical Information System	II-21
CSCI	Commercial Satellite Communications Initiative	II-21
CTT	Commander's Tactical Terminal	II-21
CALCS	Common Airborne Launch Control System	II-21
CUDIXS	Common User Digital Information Exchange System	II-21
CSP	Communication Support Processor	II-22
COINS ADA	Communications Operations Integrated System	II-22
CSS	Communications Support System	II-22
CHCS	Composite Health Care System	II-22
CAEMS	Computer Aided Embarkation Management System	II-23
CALM	Computer Aided Load Manifesting System	II-23
CODES	Computerized Deployment System	II-23
COMPASS	Computerized Movement Planning and Status System	II-23
CAPS II	Consolidated Aerial Port Systems II	II-23

Acronym	Title	Page
C2W	Constant Web Follow-on	II-23
CFM	Continental United States Freight Management	II-24
CAMP	Contingency Architecture Model for Planning	II-24
CICS	Contingency Intelligence Communications Systems	II-24
COMPES	Contingency Operations/Mobility Planning and Execution System	II-24
CTAPS	Contingency Tactical Air Control System (TACS) Automated Planning System	II-24
CMARPS	Conventional Mating and Ranging Planning System	II-25
	Copernicus Architecture	II-25
CIM	Corporate Information Management	II-25
CEAP	Corp of Engineers Automated Processing	II-26
CN/CMS	Counter Narcotics/Command Management Control System	II-26
CADS	Cover and Deception System	II-26
CATREP	Crisis Action Team Aircraft/Aircrew Report	II-26
CMSS	Crisis Management Subsystem	II-27
CRITICOMM	Critical Intelligence Communications	II-27
DATA ADMIN	Data Administration	II-27
DAWS	Defense Automated Warning System	II-27
DAAS	Defense Automatic Addressing System	II-27
DCTN	Defense Commercial Telecommunications Network	II-27
DCS	Defense Communications System	II-27
DCS HF	Defense Communications System High Frequency Entry Stations	II-28
DMIP	Defense Communications System (DCS) Mediterranean Improvement Program	II-28
DSIR	Defense Communications System (DCS) Spain/Italy Reconfiguration (DSIR)	II-28
DDN	Defense Data Network	II-28
DII	Defense Information Infrastructure	II-29
DISN	Defense Information Systems Network	II-29
DISSP	Defense Information System Security Program	II-29
DISNET	Defense Integrated Secure Network	II-29
DCN	Defense Logistics Agency Corporate Network	II-29
DMRJS	Defense Medical Regulating Information System	II-30
DMS	Defense Message System	II-30
DMSP	Defense Meteorological Satellite Program	II-30
DRSN	Defense Red Switch Network	II-30
DSCS	Defense Satellite Communication System	II-31
DSI	Defense Simulation Internet	II-31
DSN	Defense Switched Network	II-31
DRPCA	DSN Remotely Programmable Conference Arranger	II-31

Acronym	Title	Page
DTTS	Defense Transportation Tracking System	II-31
DAMA/Mini DAMA	Demand Assigned Multiple Access/Miniature Demand Assigned Multiple Access	II-32
DAMMS-R	Department of the Army Movement Management System-Redesign	II-32
DASPS-E	Department of the Army Standard Port System-Enhanced	II-32
DCAPS	Deployable Consolidated Aerial Port Subsystem	II-32
DICS	Deployable Intelligence Communications Support	II-32
DTS	Deployment Tracing System	II-33
DEB	Digital European Backbone	II-33
DWTS	Digital Wideband Transmission System	II-33
DTS	Diplomatic Telecommunications Service	II-33
DBS	Direct Broadcast Satellite	II-33
DODIIS	DOD Intelligence Information System	II-33
	Dual Mode IFF	II-33
DART	Dynamic Analysis and Replanning Tool	II-34
EPC	Early Pentagon Connectivity	II-34
EAC-COMM	Echelons Above Corps-Communications	II-34
EKMS	Electronic Key Management System	II-34
EMSI	Emergency Shipping Information System	II-34
EARLO	Enhanced Airlift Reporting for Logistics and Operations	II-35
EFRRS	Enhanced Frequency Resource Record System	II-35
EMUT	Enhanced Manpack Terminal	II-35
EPLRS	Enhanced Position Location Reporting System	II-35
	ENTERPRISE	II-35
ETHICS	European Theater High Capacity Intelligence Communications System	II-35
EWCS	EW Control System	II-36
EWCM	EW Coordination Module	II-36
FEDLOG	Federal Cataloging Data System	II-36
FTS-2000	Federal Telecommunications System	II-36
FMIS	Financial Management Information System	II-36
FMS	Financial Management System	II-36
FSBS	Fixed Submarine Broadcast System	II-37
FBS	Fleet Broadcast System	II-37
FFN	Fleet Flash Net	II-37
FMF EUCE/DEUCE	Fleet Marine Force End-User Computing Equipment/Dowsized End-User Computing Equipment	II-37
FMOCC	Fleet Mobile Operational Command Center	II-38
FSBS	Fleet Satellite Broadcast System	II-38
FLTSATCOM	Fleet Satellite Communications System	II-38

Acronym	Title	Page
FSBS	Fleet Submarine Broadcast System	II-38
FOTRS	Follow-On Tactical Reconnaissance System	II-38
FAPES	Force Augmentation Planning and Execution System	II-39
FLEX	Force Level Execution	II-39
FAADC2I	Forward Area Air Defense Command, Control and Intelligence System	II-39
FC2V	Future Command and Control Vehicle	II-39
USSOCOM HQ	Garrison C3I Improvements	II-39
GENSER	General Service Intelligence Traffic	II-40
GOES	Geostationary Operational and Environmental Satellite	II-40
GCCS	Global Command and Control System	II-40
GDSS	Global Decision Support System	II-40
GHFS	Global High Frequency System	II-40
GPS	Global Positioning System	II-40
GTN	Global Transportation Network	II-41
GETS	Government Emergency Telecommunications Service	II-41
	Granite Sentry	II-41
GBS	Ground-Based Sensor	II-41
GMF	Ground Mobile Forces Interoperability Program	II-42
GMFSC	Ground Mobile Forces Satellite Communications	II-42
GOPAX	Group Operational Passenger System	II-42
	GUARDRAIL Airborne Tactical Intelligence System	II-42
ITR	Hand-held Intra-Team Radio	II-42
	HAVEQUICK (UHF Radio System)	II-42
	HAVESTARE	II-42
	Haystack Radar Upgrade	II-42
HCS	Headquarters Cargo System	II-42
HARDS	High Altitude Radiation Detection System	II-43
HF	High Frequency Radio	II-43
HFCC	High Frequency Communication Central	II-43
HSFB	High Speed Fleet Broadcast	II-43
	HORIZON	II-44
IADS	Iceland Air Defense System	II-44
IPA	Image Product Archive	II-44
IDASC	Improved Direct Air Support Center	II-44
ISHFMR	Improved HF Radio Systems	II-44
IHFR/HFIP	Improved HF Radio/High Frequency Improvement Program	II-44
IHARDS	Improved High Altitude Radiation Detection System	II-45

Acronym	Title	Page
IMOM	Improved Many on Many	II-45
IMED	Improved Message Entry Device	II-45
IREMBASS	Improved Remote Monitored Battlefield Sensor System	II-45
ISVN	Initial Voice Switched Network	II-45
IBS	Integrated Booking System	II-45
IC3	Integrated Command, Control, and Communications System	II-46
ICDB	Integrated Communications Data Base	II-46
IMETS	Integrated Meteorological System	II-46
ISC	Integrated Satellite Control	II-46
ISDN	Integrated Services Digital Network	II-46
ITDSN	Integrated Tactical Strategic Data Networking Program	II-47
IVIPS	Integrated Vessel Information Planning and Analysis System	II-47
IAS	Intelligence Analysis System	II-47
ICM	Intelligence Correlation Module	II-47
INTELNET	Intelligence Network	II-47
IPAC	Intelligence Pacific Command Center	II-48
INMARSAT-ST	International Maritime Satellite-Satellite Terminal	II-48
ITV-MOD	Intransit Visibility-Modernization	II-48
IINCOMNET	Intratheater Intelligence Communications Network	II-48
ISAR	Inverse Synthetic Aperture Radar	II-48
JDSS	JFACC Decision Support System	II-49
JASORS	Joint Advanced Special Operational Radio System	II-49
JCT/CRS	Joint Casualty Tracing and Cruelty Reporting System	II-49
JCSAN	Joint Chiefs of Staff Alerting Network	II-49
JCSE	Joint Communications Support Element	II-49
JCMC	Joint Crisis Management Capability	II-50
JDSS	Joint Decision Support System	II-50
JDISS	Joint Deployable Intelligence Support System	II-50
JDDN	Joint Doctrine Data Net	II-50
JFAST	Joint Flow and Analysis System for Transportation	II-50
JFROM	Joint Force Reception and Onward Movement	II-51
JMCIS	Joint Maritime Command Information System	II-51
JSS	Joint Maritime Information Element Support System	II-51
JMAPS	Joint Message Analysis and Processing System	II-51
JMCC	Joint Mobile Command Capability	II-51
JPMS	Joint Publication Management System	II-52
JRADS	Joint Resource Assessment Data Base Report System	II-52

Acronym	Title	Page
JOTS	Joint Operational Tactical System	II-52
JOTS/VIDS	Joint Operational Tactical System/Visual Display System	II-52
JOPE	Joint Operations Planning and Execution System	II-53
JSIPS-NS	Joint Service Imagery Processing System (Nat'l Segment)	II-53
JSIPS-TS	Joint Service Imagery Processing System (Tactical Segment)	II-53
JSMS	Joint Spectrum Management System	II-53
JSTARS	Joint Surveillance Target Attack Radar System	II-53
JTIDS	Joint Tactical Information Distribution	II-54
JULLS	Joint Universal Lessons Learned System	II-54
JVIDS	Joint Visually Integrated Display System	II-54
JWICS	Joint Worldwide Intelligence Communications System	II-54
	LAJES Command Post (CP) Upgrade	II-54
LANDSAT	Land Satellite 7	II-54
LATIN	LANTCOM Theater Intelligence Network	II-55
LIFTMGR	Lift Manager	II-55
LCU	Lightweight Computer Unit	II-55
LOC	Limited Operational Capability	II-55
LOGSAFE	Logistic Sustainment Analysis and Feasibility Estimator	II-55
LINK/MINET	Logistics Intercomputer Network/Movement Information Network	II-55
LINCS	Long Range Imagery Network Communications System	II-56
MDL	MAGTF Data Library	II-56
MDSS II	MAGTF Development Support System II	II-56
MAGTF II	MAGTF Warplanning Model II	II-56
MRMS	Maintenance Resource Management System	II-56
	Malfunction Detection and Recording System and Ground Processing System (GO81)	II-56
MTS	Man Transportable SOCRATES	II-56
MCS	Maneuver Control System	II-56
MATT	Mapping Analysis Tool for Transportation	II-57
MAGTF II	Marine Air Ground Task Force Lift Noel II	II-57
MCDN	Marine Corps Data Network	II-57
MCSSC2	Marine Combat Service Support Command and Control System	II-57
MTACCS	Marine Corps Tactical Command and Control System	II-57
MCTFS	Marine Corps Total Force System	II-57
MDZC3	Maritime Defense Zone Command, Control, and Communications	II-58
MTFE/JMPS	Message Text Format Editor/Joint Message Preparation System	II-58
MPT	Military Airlift Command Planner's Tool Kit	II-58
MAIRS	Military Airlift Integrated Reporting System	II-58

Acronym	Title	Page
METS II	Military Export Traffic System II	II-58
MILNET	Military Network	II-58
	MILSATCOM Polar Adjunct	II-58
	MILSTAR	II-58
	Milstar Terminals	II-59
MMB	Miniature Multiband Beacon (AN/PPN-20)	II-59
MRT	Miniature Receive Terminal	II-59
MAGR	Miniaturized Airborne GPS Receiver	II-59
MSTRS	Miniaturized Satellite Threat Reporting System	II-60
MGPS	Missile Graphics Planning System	II-60
MDPS	Mission Data Preparation System	II-60
MOCC	Mobile Operations Control Center	II-60
MSE	Mobile Subscriber Equipment	II-60
MAPS II	Mobility Analysis and Planning System II	II-60
MASS	Mobility Analysis Support System	II-61
MAOC	Modular Air Operations Center Improvement Program	II-61
MODCOM	Modular Communications	II-61
MCE/TAOM	Modular Control Equipment/Tactical Air Operations Module	II-61
MOVREP	Movement Reporting System Fleet Movement Report	II-61
MAGIC	Multidimensional Application Gbps Internet Consortium	II-62
MFRTS	Multifunction Radar Transponder System	II-62
MLS TIP	Multilevel Security TIP	II-62
MEM	Multiple Engagement Module	II-62
MSDB/IDB	Multisource Data Production System (MSDPS) Multisource Data Base/Integrated Data Base	II-62
MIMES	Multispectral Imagery and Materials Exploitation System	II-62
MUSIC	Multi-User Special Intelligence Communications System	II-63
NII	National Information Infrastructure	II-63
NABS	NATO Air Base Satellite Communications	II-63
NICS	NATO Integrated Communications System	II-63
NTTS	NATO Terrestrial Transmission System	II-63
NALCOMIS	Naval Aviation Logistics Command Management Information System	II-63
INTELNET	Naval Intelligence Communications Systems	II-64
NIPS	Naval Intelligence Processing System	II-64
NODDES	Naval Oceanographic Data Distribution and Expansion System	II-64
NTCCS	Naval Tactical Command Support System	II-64
NTS	Naval Telecommunications System	II-64
NSSIP	Navigation Sensor System Interface Program	II-65

Acronym	Title	Page
NCCS	Navy Command and Control System (NCCS) Ashore	II-65
NCCS	Navy Command and Control System Ashore (NCCS Ashore) Upgrade	II-65
NESP	Navy Extremely High Frequency Satellite Communications Program	II-65
NAVNET	Navy Network	II-66
NTCS-A	Navy Tactical Command System-Afloat	II-66
NTDS	Navy Tactical Data System	II-66
NIDS	NDL Integrated Data System	II-66
	Newsdealer	II-66
NCTR	Non-Cooperative Target Recognition	II-66
NADS	North American Defense System	II-66
NITES	NTCS-A/NCCS-A Integrated Tactical Environmental Subsystem	II-67
NPES	Nuclear Planning and Execution System	II-67
OBU/OED	Ocean Surveillance Information System (OSIS) Baseline Upgrade/OBU Evolutional Development	II-67
OA LAN/MIS	Office Automation Local Area Network (LAN)/Management Information System	II-67
OIS	Office Information System	II-68
OTCIXS	Officer in Tactical Command Information Exchange System	II-68
OTCIXS II	Officer in Tactical Command Information Exchange Subsystem II	II-68
OPSCOMM	Operational Secure Communications	II-68
OSS	Operations Support System	II-69
	OUTBOARD II	II-69
	PAVE PAWS	II-69
PCS	Personal Communications System	II-69
PA3IS	Pilot Accelerated Architecture Acquisition Initiative System	II-70
PLRS	Position Location Reporting System	II-70
PDS	Processing and Display System	II-70
POADS	Psychological Operations Automated Data System	II-70
RSA	Range Standardization and Automation Program	II-70
RAAP	Rapid Application of Air Power	II-71
RSP	Red Switch Project	II-71
ROCC/SOCC	Regional/Sector Operation Control Center	II-71
RCAFMS	Rehosted CAFMS	II-71
RAILS	Relational Analysis of Intermetted Linkages Subsystem	II-71
RTAPS	Relocatable Target Area Planning System	II-71
RMS	Requirements Management System	II-72
ROPES	Route and Penetration Evaluation System	II-72
STICS	Scalable Transportable Intelligence Communications System	II-72
	SCAMPI	II-72

Acronym	Title	Page
SEASTRAT	Sealift Strategic Contingency Planning System	II-72
SIDS	Secondary Imagery Dissemination Systems	II-72
SIPRNET	Secret Internet Protocol Router Network	II-73
SPL	Secret Personal Computer Local Area Network	II-73
SMART-T	Secure Mobile Anti-Jam Reliable Tactical Terminal	II-73
STU-III	Secure Telephone Unit 3rd Generation	II-73
SVS	Secure Voice System	II-73
	SENTINEL BYTE	II-74
	SHF Replenishment	II-74
SNAP III	Shipboard Non-tactical ADP Program	II-74
STT	Shore Targeting Terminal Upgrade	II-74
SCAMP	Single Channel Anti-Jam Manportable Terminal	II-74
SINCGARS	Single Channel Ground and Airborne Radio System	II-75
	SIOP and Red Integrated Strategic Offensive Plan Gaming	II-75
SIMON	SIOP Monitoring	II-75
	SOF-MOSS	II-75
SOF-IV	SOF Intelligence Vehicle	II-75
SOFLAM	SOF Laser Acquisition Marker	II-75
	SOFTEC	II-76
	SONATA	II-76
SOSUS	Sound Surveillance System	II-76
SPADOC 4	Space Defense Operations Center 4	II-76
SPRINTCOMM	Special Intelligence Communications	II-76
SOCRATES	Special Operations Command, Research, Analysis, and Threat Evaluation System	II-76
SOFBASE	Special Operations Forces (Data/Supply) Base	II-77
SOFPARS	Special Operations Forces Planning and Rehearsal System	II-77
SOFTACS	Special Operations Forces Tactical Assured Connectivity System	II-77
SAAS	Standard Army Ammunition System	II-77
SAMS	Standard Army Maintenance System	II-77
SARSS	Standard Army Retail Supply System	II-78
STACCS	Standard Theater Army Command and Control System	II-78
SORTS	Status of Resources and Training System	II-78
SCACS	STRATCOM Command and Control System	II-78
SINET	STRATCOM Intelligence Network	II-78
SACCS	Strategic Automated Command and Control System	II-79
STRADS	Strategic Deployment System	II-79
SMARP	Strategic Mating and Ranging Program	II-79

Acronym	Title	Page
SMDPS III	Strategic Mission Data Preparation System, Phase III	II-79
SOCS	Strategic Operations Conference System	II-79
SEACOP	Strategic Sealift Contingency Planning System	II-80
STEP	Strategic Tactical Entry Point	II-80
SWPS	Strategic War Planning System	II-80
SWPS	Strategic Weapons Planning System	II-80
SISOCS	Streamlining of Information Service Operations Consolidation Study	II-81
SATS	Submarine (SLBM) Adaptive Targeting System	II-81
SRSDL	Submarine Retargeting System Data Link	II-81
SCDL	Surveillance and Control Data Link	II-81
SURTASS	Surveillance Towed Array System	II-81
SCIS	Survivable Communications Integration System	II-81
SONET	Synchronous Optical Network	II-82
SPEED	System Planning Engineering and Evaluation Device	II-82
TAOM	Tactical Air Operational Module	II-82
TAMPS	Tactical Aircraft Mission Planning System	II-82
TCO	Tactical Combat Operations	II-82
TADIX A Phase IV	Tactical Data Information Exchange Subsystem A Phase IV	II-83
TADIXS	Tactical Data Information Exchange System	II-83
TADIL A	Tactical Data Link A (Link-11)	II-83
TADIL J	Tactical Data Link J (Link-16)	II-83
TESS	Tactical Environmental Support System	II-84
TIBS	Tactical Information Broadcast Service Network Data Link System	II-84
TRE/TRAP	Tactical Receiver Equipment/TRE-Related Application	II-84
TRIGS	Tactical Reconnaissance Intelligence Ground Station	II-84
TACSATCOM	Tactical Satellite Communications	II-85
TMAPR	Tanker Mating and Ranging Program	II-85
TDSS	Target Development Support System	II-85
TAFIM	Technical Architecture Framework for Information Management	II-85
TARE	Telegraph Automatic Relay Equipment	II-85
TERMS E/I	Terminal Management System Export/Import	II-86
TAMNIS	Theater Army Medical management and Information System	II-86
TAMPS	Theater Avoidance Mission Planning System	II-86
TENCAP	Theater Exploitation of National Capabilities	II-86
TENET	Theater Extension Network	II-87
TSCM	TOMAHWK Strike Coordination Module	II-87
TOPO SET	Topographic Set	II-87



# Appendix C

## Bibliography

## Bibliography

1. DOD Technical Architecture Framework for Information Management, (TAFIM), DISA, Oct 92
2. CJCS, MEMORANDUM OF POLICY #30, Command and Control Warfare, 8 Mar 93.
3. Defense Information System Network (DISN) Roadmap, DISA Memo, 7 Jun 93.
4. MIL-STD-187-700, Interoperability and Performance Standards for the Defense Information System, DOD, 1 Jun 92.
5. MIL-STD-2045-38000, Network Management for DOD Communications (Draft), DOD, 4 Jan 93.
6. Government Network Management Profile (GNMP), FIPS Pub 179, Dept of Commerce, NIST, 14 Dec 92.
7. Government Open Systems Interconnection Profile (GOSIP), FIPS Pub 146-1, Dept of Commerce, NIST, 3 Apr 91.
8. Government Emergency Telecommunications Service (GETS) Technical Description (Revised), OMCNCS, 23 Nov 93.
9. Defense Information System Network (DISN) Strategic Plan (Objective System), DOD, Off of ASD(C3I), Oct 92.
10. Defense Information System Network (DISN) Operational and Organizational Concept, DISA, 31 Jan 94.
- 10a. Defense Information System Network (DISN) Architecture, Executive Summary, DISA-AR-1000.ES, 20 May 93.
11. Reshaping C3I, AFCEA Symposium 93 Annotated Briefings, 28-30 Sep 93.
12. VISION, The Army Enterprise Strategy, Dept of the Army, DTIC #AD-A273 357, Nov 93.
13. HORIZON, Air Force C4I Strategy for the 21st Century, USAF Brochure, 1993.
14. SONATA, Brochure, Dept of the Navy, OP-094, 1993
15. C4I For The Warrior, Objective Concept, JCS, 12 Jun 1992.
16. Automatic Switching in a Joint TaskForce Environment, DISA/JIEO Report 8124, Mar 94.

17. DODI 4630.8, Procedures for Compatibility, Interoperability, and Integration of C3I Systems, DOD, 18 Nov 92.
18. MILSATCOM Architecture and Program Planning O-6 Coordination Meeting, Annotated Briefing, DISA, 18 Mar 94.
20. Commercial Satellite Communications Initiative (CSCI) Briefing for ASD(C3I), Annotated Briefing, DISA, 9 Mar 94.
21. Post-FTS2000 Acquisition Alternatives, White Paper, Acquisition Working Group of the Interagency Management Council, Apr 94.
22. Pilot Accelerated Architecture Acquisition Initiative (PA3I) System Description Document, DOD CIO, 19 Oct 94.
23. DOD Goal Security Architecture, Draft.
24. Annual Report to the President and the Congress, Sec Def, Jan 94.
25. USSPACECOM Command, Control, Communications and Computer Systems Master Plan (C4SMP), USSPACECOM, 3 Sep 93.
26. USTRANSCOM Command, Control, Communications Computer and Intelligence (C4I) Systems Master Plan, USTRANSCOM/J-6, 10 Sep 93.
27. USCINCLANT Command, Control, Communications, and Computers (C4) Systems Master Plan (C4SMP), USLANTRCOM, 30 Sep 93.
28. CINCFOR Command, Control, Communications, Computer, and Intelligence Systems Master Plan, CINCFOR, 20 Sep 93.
29. SOF Command, Control, Communications, and Computers Systems Master Plan (SOF C4SMP), USSOCOM, 22 Oct 93.
30. USCENTCOM Command, Control, Communications, and Computer Systems Master Plan (C4SMP), 30 Sep 93.
31. USEUCOM Command, Control, Communications and Computer Systems Master Plan (C4SMP), USEUCOM, 19 Nov 93.
32. National Military Command System (NMCS) Current System Description, DISA/JIEO, Mar 93.
33. USPACOM 1993 Command, Control, Communications, Computers, and Intelligence Systems Master Plan, USPACOM, 30 Sep 93.
34. NORAD Command, Control, Communications, and Computer Systems Master Plan, NORAD, 93.

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